The New England
Journal of Medicine

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VOLUME 229 JULY 8, 1943 NUMBER 2

PHYSIOLOGIC CONSIDERATIONS IN THE TREATMENT OF NEPHRITIS*

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BOSTON

IT IS a very great honor for me to have been given this opportunity of presenting the fifty-fourth Shattuck Lecture. As you well know, this lectureship was founded in the year 1854 by a gift from the estate of George C. Shattuck, the elder, son of Benjamin Shattuck, a medical practitioner in Templeton, Massachusetts, and father of George C. Shattuck, the younger, the fourth Hersey Professor of the Theory and Practice of Physic. In earlier years at Harvard College it was the custom for all newly appointed professors to deliver an oration on taking office, and I feel that my lecture this evening corresponds in many ways to that earlier custom. With this in mind, I have selected a subject for discussion that has been of particular interest to several former professors of the theory and practice of physic. As the result of their observations we have obtained a clear picture of the pathologic changes that occur in nephritis and a good understanding of its clinical course.

This evening I wish to discuss particularly a rational basis for the treatment of the metabolic disturbances that occur in patients with renal insufficiency. Patients with kidney disease constitute a large and important group in both private and hospital practice. In the past it has been the custom to discuss therapy largely on the basis of the type of renal lesion. Such an approach usually resulted in prolonged discussion as to the nature of the renal disease and in little consideration for the specific correction or improvement of the presenting metabolic disturbances. A brief survey of the paragraphs relating to therapy in nephritis as recorded in standard medical textbooks is sufficient to impress one with the confusion that exists at present in this field. Medical students and house officers are not infrequently bewildered as to how to proceed in attempting to correct the physiochemical disturbances that occur in patients with nephritis.

Contact with the clinical manifestations of renal disease soon impresses one with the fact that nearly every type of metabolic disturbance that is known to occur in conjunction with renal disease may occur in the presence of any specific type of renal lesion, although, as we know, particular metabolic disturbances are encountered with much greater frequency in association with certain types of renal lesions. This consideration might lead one to suspect that it would prove to be simpler and certainly more helpful if therapy were dictated primarily by the nature of the metabolic disturbance rather than by the type of pathologic change in the kidney. Thus the measures used in combating azotemia would be determined by such facts as whether azotemia was associated with dehydration, hypoproteinemia, edema or hypertension rather than whether azotemia was a consequence of acute nephritis, chronic glomerular nephritis, pyelonephritis or congenital cystic disease of the kidneys. We have a precedent for this approach in the methods employed in the treatment of diabetic acidosis and coma. In this disease hyperglycemia, acidosis, dehydration and lipemia are treated as such, and in outlining therapy little attention is given to the nature of the underlying pathologic changes. On the whole these patients do well because we have developed some degree of skill in estimating the *quantity* as well as the *quality* or type of therapeutic agents employed. Quantitative considerations play an extremely important role in the treatment of the metabolic disturbances associated with nephritis, since the body under these circumstances is so limited in its ability to compensate for an excess or deficiency of the indicated therapeutic agents. Hence it is not

*The Shattuck Lecture, delivered at the annual meeting of the Massachusetts Medical Society, Boston, May 25, 1943.

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enough to know *what to use*—one must also have a very clear idea as to *how much to use!*

At this time it might be helpful to review a few basic physiologic principles, a knowledge of which is essential to the intelligent application of the therapeutic measures indicated in the treatment of patients with nephritis. We know that in order to maintain health the body must be provided with at least the four essentials (Table 1).

TABLE 1. *Basic Dietary Requirements for Health.*

Water, sufficient to provide a urine volume of approximately 1000 cc. daily
Calories, sufficient to maintain weight
Protein, approximately 1 gm. per kilogram per day
Essential minerals and vitamins

Under most conditions if water intake is sufficient to provide for a urine volume of 1000 cc. daily, renal function may be carried on quite satisfactorily. It is obvious that in the presence of renal insufficiency more water may be required than under normal conditions, since the kidneys' ability to concentrate urine may be markedly impaired.

The ideal diet for health is one that provides sufficient calories for maintenance of optimum weight. In undernourished patients, the caloric requirement will be considerably increased until optimum weight has been attained; in children, calories sufficient to permit normal growth must be provided. For adults, a protein allowance of 1 gm. per kilogram daily is adequate. Evidences of specific amino acid deficiencies may appear on diets of lower protein content unless the particular proteins used are complete in essential amino acids. The daily requirements for the various minerals and vitamins have now been fairly well established.[1]

Since these four basic dietary requirements are the minimum necessary under optimal conditions, there is every reason to believe that in the presence of disease they will certainly not be decreased; in fact, the requirement of certain of them may be greatly increased. Hence there is little justification for a therapeutic regimen in the treatment of patients with renal insufficiency that permits the exclusion or significant reduction in any one of these essentials for any continued period of time.

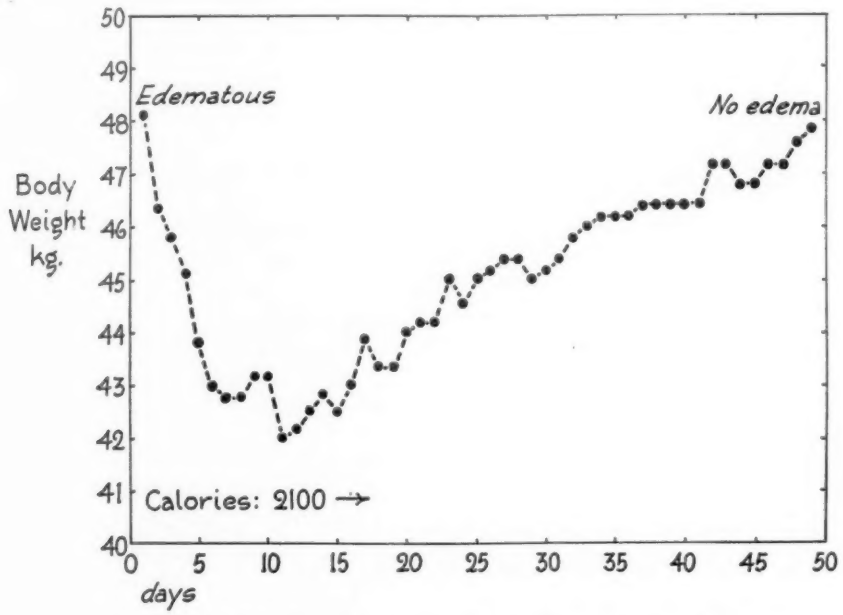

FIGURE 1. *Weight Curve in a Patient with Glomerular Nephritis.*

Difficulty in estimating the caloric requirement of patients with renal insufficiency. In health one can readily establish the caloric requirement of a subject by following changes in body weight in response to the ingestion of a diet of varying caloric content. In childhood, the added factor of growth must be considered. In most diseases the caloric requirement can also be estimated from changes in body weight. There are, however, at least two groups of diseases that provide notable exceptions to this rule: diseases associated with impaired intestinal absorption, that is, enteritis, sprue, cirrhosis of the liver and so forth; and cardiac and renal failure with edema.

In the first group of diseases weight loss may occur despite a normal caloric intake because of poor or impaired absorption from the gastrointestinal tract. In the second group weight gain may occur despite an inadequate caloric intake because of excessive salt and water retention. Thus in patients with nephritis it is frequently impossible to estimate the adequacy of caloric intake by following changes in body weight. This is well illustrated by the marked fluctuations in body weight that were observed in a patient with glomerular nephritis who was maintained on a constant diet of adequate caloric intake (Fig. 1). The patient had been ill for approximately ten days before entering the hospital. On admission this patient weighed 48.2 kg. and was markedly edematous. His daily caloric intake was 2100 calories. During the first ten days after admission a weight loss of over 6 kg. (approximately 13 lb.) was observed. This occurred despite the intake of adequate calories for weight maintenance. On the tenth day there was no edema present, and the patient appeared distinctly undernourished. Forty days later this patient weighed 48 kg., a gain of 13 lb. on the same caloric intake, that is, 2100 calories daily, and at that time there was no edema present. Thus on a constant diet adequate for growth this patient first lost weight, then gained, the loss being occasioned by excretion of fluid; the gain in this instance was largely new tissue.

Estimation of water balance. Because edema and dehydration are frequent complications of nephritis, considerable emphasis is placed on measurement of water balance. Unfortunately, to most physicians the term "water balance" indicates

TABLE 2. *Determination of Fluid Balance.*

INTAKE	OUTPUT
Liquids	Urine
Water content of solid food	Feces
Water resulting from oxidation of protein, carbohydrate and fat	Insensible water loss
	Perspiration
	Abnormal water losses (saliva, sputum, draining fistulas and so forth)

simply the relation that exists between the quantity of liquids ingested and urine output! It is obvious from a study of Tables 2, 3, 4 and 5 that one cannot interpret water balance on the basis of the difference between fluid intake and urine output. Fortunately there are fairly reliable clinical signs that indicate changes in water balance, that is, increasing edema, dry skin, dry tongue, enophthalmos and so forth since under most circumstances it is impossible or impractical to make the elaborate measurements necessary for accurate determination of water balance.

In relation to edema it is important to emphasize the fact that the retention of additional fluid in the extracellular compartment is almost totally dependent on the retention of *sodium*.[2] Thus, it

TABLE 3. *Determination of Sensible and Insensible Water Loss (overnight weight loss under standard conditions).*

Weight of patient at 9 p.m.	52.5 kg.
Weight of patient at 9 a.m.	52.2 kg.
Difference	0.3 kg.

$0.3 \text{ kg.} \times \frac{24}{12} = 0.6$ kg. insensible water loss in a 24-hour period

may be stated that without a source of sodium there can be little retention of ingested fluid. This can easily be proved by drinking a large quantity

TABLE 4. *Calculation of Water of Oxidation.*

1 gm. protein	= 0.4 gm. water
1 gm. carbohydrate	= 0.6 gm. water
1 gm. fat	= 1.0 gm. water

Example

Diet: Protein, 70 gm.; carbohydrate, 200 gm.; fat, 120 gm.

70 × 0.4 =	28 gm.
200 × 0.6 =	120 gm.
120 × 1.0 =	120 gm.
Total	268 gm. water

of water and restricting sodium chloride to 1.5 gm. or less per day. On this regimen little or no increase in body weight will be observed. If, on the other hand, one drinks adequate quantities of water and ingests large quantities of salt, excessive weight gain will occur and edema may become apparent. For the patient with nephritis it is well to emphasize the fact that quantities of sodium chloride as small as 2 to 5 gm. daily may present a tremendous excess for renal excretion and thus

TABLE 5. *Calculation of Fluid Balance.*

Diet: Protein, 70 gm.; carbohydrate, 200 gm.; fat, 120 gm.

INTAKE		OUTPUT	
Fluids	1500 cc.	Urine volume	1150 cc.
Water content of solid foods	600 cc.	Fecal loss	250 cc.
Water of oxidation	268 cc.	Insensible water loss	792 cc.
Total	2368 cc.	Total	2192 cc.

Difference between water intake (2368 cc.) and water output (2192 cc.) = 176 cc.

Weight of patient at beginning and end of 24-hour period revealed a gain of 0.1 kg. (100 cc.).

induce an effect equivalent to 20 to 30 gm. of sodium chloride daily in normal subjects.

A factor that also may affect water balance in female patients with nephritis is the salt-and-water retention that occurs normally during the three to seven days prior to the onset of menstruation.[3]

Normal women are known to retain excessive quantities of salt and water during the week immediately preceding the onset of menstruation (Fig. 2). With the onset of menstruation, a diuresis is frequently observed and the excess fluid is eliminated. Female patients with nephritis may

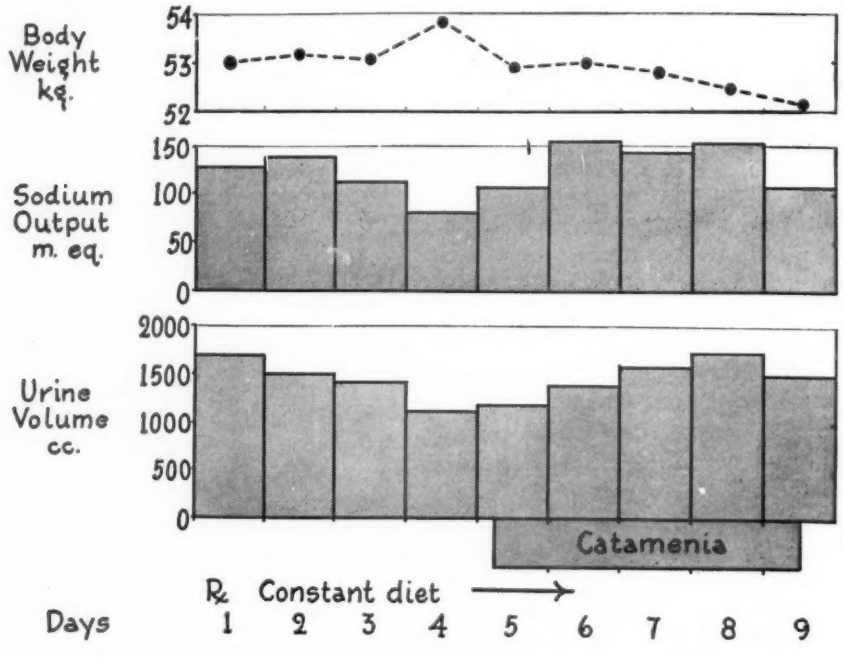

FIGURE 2. *The Normal Premenstrual Gain in Weight Associated with Sodium Retention.*

be expected to exhibit this same phenomenon during the years of ovarian activity. In the presence of a fundamental derangement that predisposes to fluid accumulation such as nephritis, however, one may expect a much greater total retention of sodium, chloride and water. Female patients afflicted with chronic nephritis have been suspected not infrequently of having recurrent exacerbations of their disease, as evidenced by the appearance of edema and a moderate rise in blood pressure during the phase of premenstrual retention of sodium, chloride and water (Fig. 3).

Acid-base balance. In normal subjects an equilibrium exists in which the acid ash of the diet and the acid end products of metabolism are eliminated with the use of a minimum quantity of fixed base—principally sodium. This is accomplished in part by the ability of the lungs to ventilate carbon dioxide, in part by the ability of the kidneys to form the base ammonia from urea, which is a waste product, and in part by the ability of the kidneys to eliminate an acid urine in the presence of a glomerular filtrate that is alkaline in reaction (Table 6). Patients with nephritis, however, can no longer conserve base as efficiently as can normal subjects, since the ability of the kidney to form ammonia from urea may be limited. Sodium and other fixed bases are drawn from the body and excreted in order to help neutralize acid end products excreted by the kidney. This may result in a severe depletion of the alkali reserve of the body. Since the production of acid metabolites cannot be decreased significantly in patients with renal disease who are resting in bed and who do not have fever, only two approaches

TABLE 6. *Acid-Base Balance.*

The body must be prepared to care for an excess of acid resulting from:
End products of metabolism
Acid-ash diet
Several mechanisms are utilized in caring for an excess of acid:
Buffer system of the blood
Ventilation of carbon dioxide
Excretion of an acid urine
Formation of ammonia by the kidney

are open by which one may conserve the base reserves of the body: decreasing the acid ash of diet by ingesting a diet of neutral or alkaline ash composition; and administering an excess of alkali (preferably sodium) to provide for the increased renal needs of fixed base. The former approach may be employed at all times; the latter is usually contraindicated in the presence of edema.

Aluminum hydroxide may be added to milk or taken with food; by so doing a great reduction

in phosphorus absorption can be demonstrated (Fig. 4). By employing aluminum hydroxide one is able to use foods of high nutritive value — for example milk — that naturally contain large quantities of fixed acid, and that without the addition of aluminum hydroxide, would add to the burden placed on the kidney.

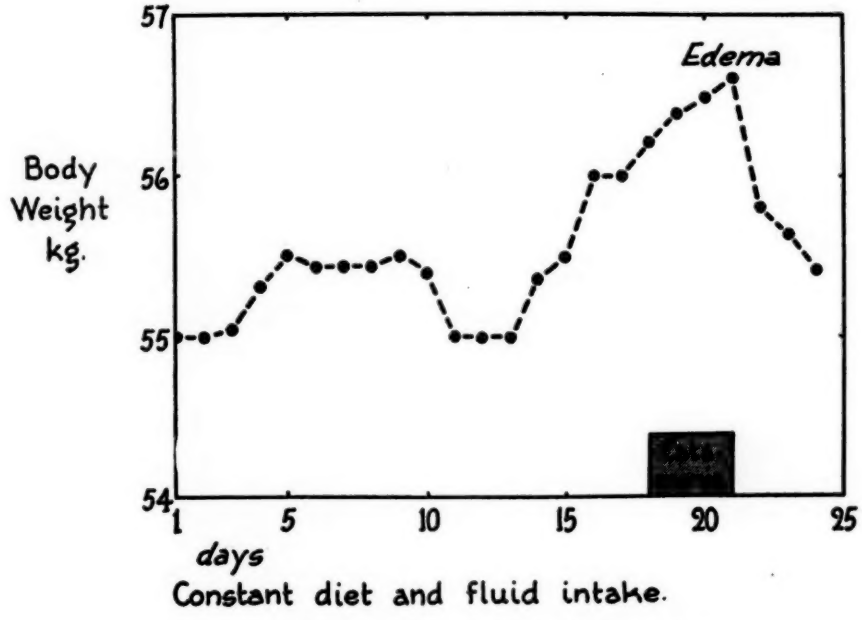

FIGURE 3. *Changes in Weight during the Menstrual Cycle in a Nephritic Patient.*

Acid-base composition of blood plasma. Detailed analysis of the changes in acid-base composition of blood plasma that may occur in patients with renal disease has been presented by Peters and his co-workers.[4] The physiologic implications that arise in relation to these changes have been clearly outlined by Gamble.[2] It is obvious that in the treatment of patients with renal insufficiency, just as in the treatment of patients with severe diabetes, one must have available laboratory facilities for certain chemical determinations. It is essential to limit the necessary determinations to those that can be carried out in most general hospital laboratories if the application of successful treatment is not to be limited to a few research centers. It would appear desirable to be able to determine the blood urea nitrogen or nonprotein nitrogen level of the blood, the total serum protein, the serum chloride and the serum carbon dioxide combining power. The albumin-globulin ratio is not essential for guiding therapy, since it is safe to assume that all patients with nephritis probably have some reduction in serum albumin level. A knowledge of the serum chloride level and the serum carbon dioxide combining power gives one a fairly accurate indication of the serum base under most circumstances and permits one to decide whether sodium chloride or sodium bicarbonate or both should be administered or withheld (Fig. 5). In summary, one should be able to guide therapy efficiently and effectively in most cases if the following chemical determinations can be performed promptly: blood urea nitrogen or nonprotein nitrogen, total protein, serum chloride and serum carbon dioxide combining power.

Role of serum protein. An understanding of the composition and role of the serum proteins is essential in considering the treatment of patients with nephritis. The relation of albumin to globulin in the serum is well known, and the changes in colloid osmotic pressure that occur with changes in the relative quantities of these two proteins are evident (Fig. 6). A striking reduction in serum colloid osmotic pressure may occur in the presence of a normal total serum protein level as a consequence of a decrease in the albumin-globulin ratio. This latter change may be observed frequently in patients with acute nephritis in whom a rise in globulin frequently conceals a reduction in albumin. Thus despite a normal total serum protein level one may have a greatly reduced serum colloid osmotic pressure.

Longcope's[5] studies have revealed that patients with acute nephritis of severe degree usually have a striking reduction in serum albumin level and a

corresponding rise in serum globulin. Patients with less severe renal damage show similar but less striking changes. Recovery from acute nephritis is usually associated with a rise in serum albumin and a fall in serum globulin. It therefore appears that most patients with renal impairment, either acute or chronic, manifest some degree of serum albumin depletion, and therefore one of the most characteristic disturbances in metabolism associated with renal disease is hypoalbuminemia. Since in most cases it is not possible to obtain a striking increase in serum albumin level with high-protein feeding or amino acids by mouth or intravenously, it is apparent that serum albumin administration is the only effective means of compensating for this deficiency.

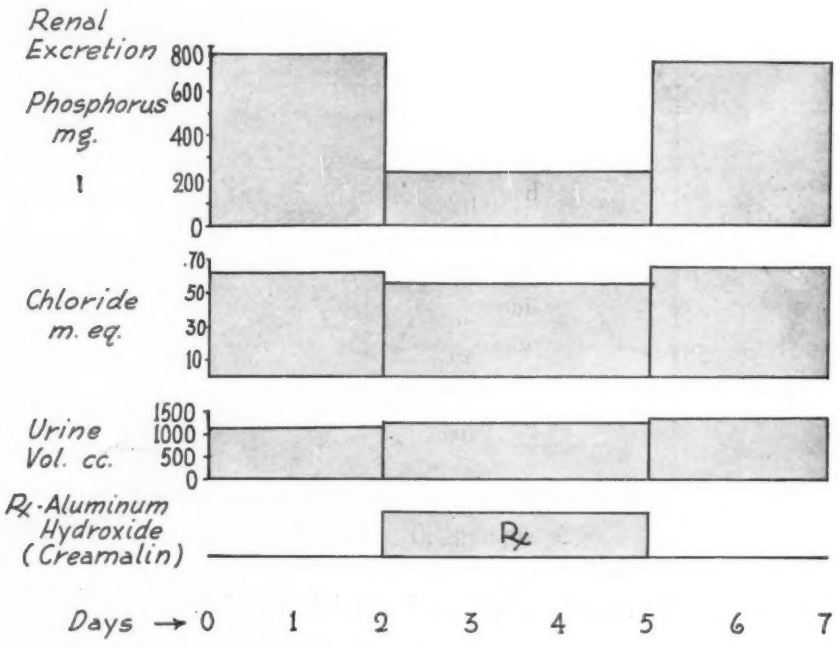

FIGURE 4. *The Effect of Aluminum Hydroxide Therapy, Diet Being Constant.*

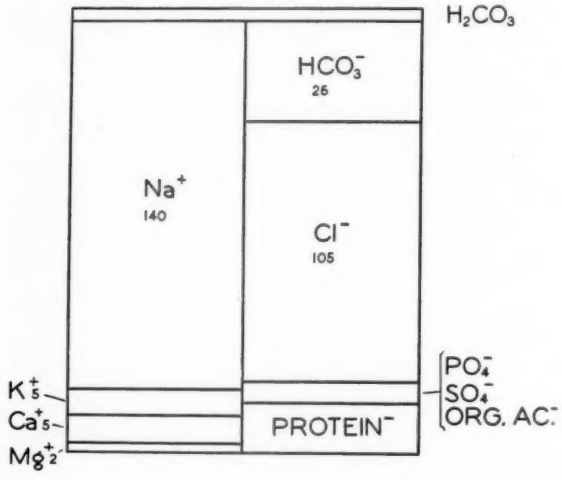

FIGURE 5. *The Acid-Base Composition of Blood Plasma.*

Because of its apparent rapid utilization, serum albumin administration in doses available for chemical use should not be expected to increase the level of serum albumin. It can be estimated from studies on animals fed protein-deficient diets that in man an increase of 1 gm. in the concentration of serum albumin or a total increase of 30 gm. in plasma albumin on the basis of a plasma volume of 3000 cc. (Table 7) may be reflected in the entire body as necessitating the retention of 750 gm. of protein (Fig. 7).[6] The concept that an equilibrium exists between the body protein in general and serum albumin aids in understanding

TABLE 7. *Calculation of the Total Quantity of Protein in Plasma.*

$$\frac{\text{Plasma volume}}{100} \times \text{protein concentration (gm. per 100 cc.)} = \text{Total protein}$$

Example:

$$\frac{3000}{100} \times 7.0 \text{ gm.} = 210 \text{ gm.,}$$

of which two thirds is albumin, that is, 140 gm.

why it is difficult, if not impossible, to increase appreciably the serum albumin level with the quantities of intravenous protein that can be given safely.

In administering protein intravenously to patients with renal insufficiency it appears that the chief benefit is derived from the temporary increase in colloid osmotic pressure, the resulting increased hydremia, the increased glomerular filtration and hence the decrease in edema and azotemia. Since the action of a single dose of serum albumin or protein is transient,[7] daily or divided daily administrations are indicated. Repeated small doses are particularly advisable rather than a single large dose in patients with hypertension or in patients with cardiac enlargement. It is possible, as a result of the reduction in edema and azotemia that frequently follows the administration of parenteral fluids and albumin solution, that the digestion and absorption of ingested protein and the synthesis of serum albumin from ingested protein may be improved, and this improvement in turn may be reflected by a gradual rise in serum protein concentration.

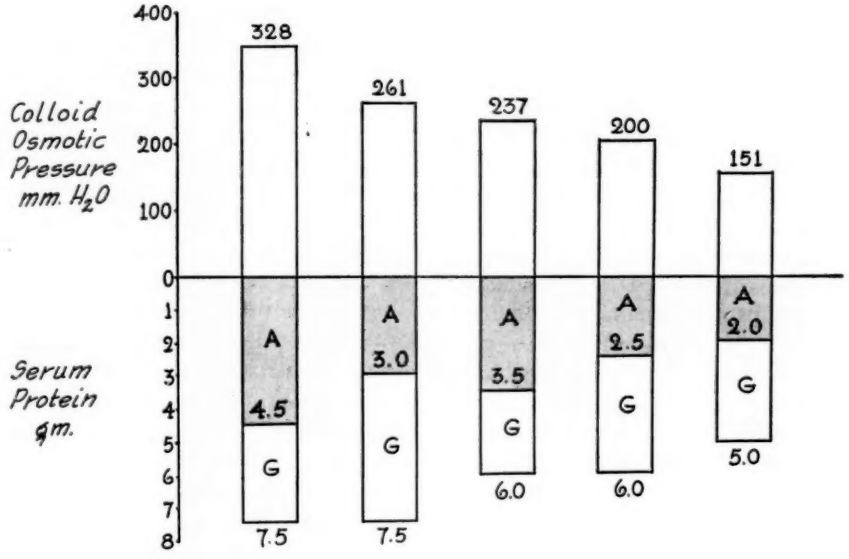

FIGURE 6. *Serum Proteins and Colloid Osmotic Pressure.*

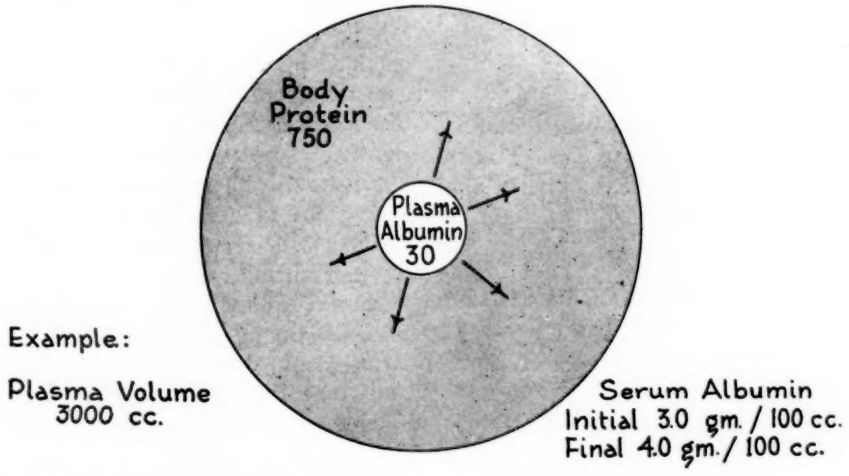

FIGURE 7. *Diagram Showing That to Increase Serum Albumin 1 Gm. Requires the Retention of 750 Gm. of Protein.*

The total plasma content of protein may also play an important physiologic role. We are accustomed to assume that a value of 7 gm. of serum protein today and a similar value observed one or

two weeks hence represent equivalent quantities of serum protein in the body. Actually this may not be the case, since plasma volume may have increased or decreased in the meantime, and thus there may have been a considerable increase or decrease in the *total quantity of plasma protein*. This can be demonstrated by injecting slowly a measured quantity of serum albumin intravenously, under which circumstance little or no rise in serum albumin level will occur, but a very great increase in plasma volume can be demonstrated[7] and of course the total quantity of plasma protein is temporarily increased. That such changes might occur spontaneously in patients with renal insufficiency is possible. It is of interest to note how frequently diuresis attended by no increase in serum albumin level is assumed to indicate that no change in serum protein could have occurred. Such a deduction is obviously subject to error unless plasma-volume measurements show that no change has occurred in the total quantity of serum albumin. In the absence of direct blood-volume measurement, changes in the red-cell count or hemoglobin may be useful in interpreting sudden changes in plasma volume. The determination of the albumin-globulin ratio may also be helpful in deciding whether a significant change in serum albumin has occurred.

To maintain nitrogen balance and to attempt to increase the serum albumin level one might consider the use of one or more of the following nitrogen-containing preparations: protein by mouth, amino acid by mouth, amino acid by vein, albumin intravenously, plasma intravenously and whole blood intravenously.

Adequate protein by mouth is of course indicated in all patients who are not nauseated or vomiting. Patients with renal insufficiency with normal blood-urea level may be given 2 to 3 gm. of protein per kilogram of body weight with advantage. In these patients a high-protein diet may be considered to be advantageous for several reasons (Table 8). Patients with elevated blood urea nitrogen will do better on a diet restricted to 0.5 to 1.0 gm. of protein per kilogram of body weight.

TABLE 8. *Some Advantages Pertaining to the Use of a High-Protein Diet in Patients with Renal Insufficiency associated with Edema without Azotemia or Acidosis.*

Improved nitrogen balance
Increased urea
Increased renal blood flow
Acid ash

The oral administration of amino acid solution, a form of nitrogen that can be readily absorbed and that does not place so great a burden on the digestive system as do the complex proteins, has been recommended for patients with renal insufficiency. Most patients, however, prefer complete proteins to the amino acid solutions that are available at present. Amino acid solutions by vein do not provide the colloid osmotic effect of protein solutions. Although amino acid solutions do form a ready source of nitrogen, and do represent complete replacement, there is little indication for their use in patients with renal insufficiency if albumin or plasma solutions are available. If parenteral therapy must provide all nutritional requirements for a period longer than one week, certainly the administration of amino acid solutions is indicated.

At present a solution of albumin has two advantages over a solution of concentrated plasma for patients with renal insufficiency: it can be prepared with a relatively low sodium chloride content, and it has a higher colloid osmotic pressure. Transfusions of whole blood provide hemoglobin in addition to plasma proteins and are the only effective treatment for the anemia so frequently associated with renal azotemia.

In the treatment of patients with azotemia without edema, it is generally recognized that forcing fluids is particularly advantageous in reducing the accumulation of metabolites in the blood. Many investigators believe that maximum glomerular filtration can be obtained if adequate quantities of water are ingested. Studies in dogs, however, reveal the fact that the rate of urine flow and the glomerular filtration (creatinine clearance) can be appreciably increased over the maximum obtained by fluid administration by mouth if glucose solution is administered intravenously. Further increases can be obtained if normal saline infusions are employed instead of glucose (Fig. 8). Until proved otherwise, it would appear to be advantageous to use these solutions parenterally in patients with azotemia without edema or impending cardiac failure.

Nausea and vomiting constitute a major complication in the treatment of patients with renal impairment. Under these circumstances all fluid and nourishment must be given parenterally (Table 9). It may be possible to administer water by rectum; otherwise fluids and nourishment must be given intravenously or subcutaneously (Table 10). Under these circumstances one may attempt

TABLE 9. *Parenteral Therapy Required in the Presence of Nausea and Vomiting.*

Daily body needs:	
Water	2500 cc.
Calories	1200
Protein	25–50 gm.

to fulfill basic nutritional requirements by administering glucose and protein parenterally (Table 11). The provision of 1000 to 1200 calories and 25 to 50 gm. of protein may be considered to meet minimum basic requirements under these circumstances. Vitamin preparations may be given parenterally. Because of the large quantity of glucose solution needed, water requirements are easily met. *Glucose administration intravenously should not exceed a rate of 1 gm. per kilogram of body weight per hour* for optimum utilization. Hypertonic glucose solutions and protein solutions should be given very slowly and in small quantities to patients with hypertension, cardiac enlargement or acute nephritis.

When fluids are forced, either by mouth or parenterally, in the treatment of patients with azotemia, it must be recognized that essential minerals, such as sodium and chloride, are also lost in excess. Continued treatment of this type may result in a striking fall in the serum level of sodium and chloride, a decrease in the plasma volume and consequently dehydration and an *increase* in azotemia. Thus there is a real necessity for providing sodium chloride, in small quantities at least, during such periods of active diuresis.

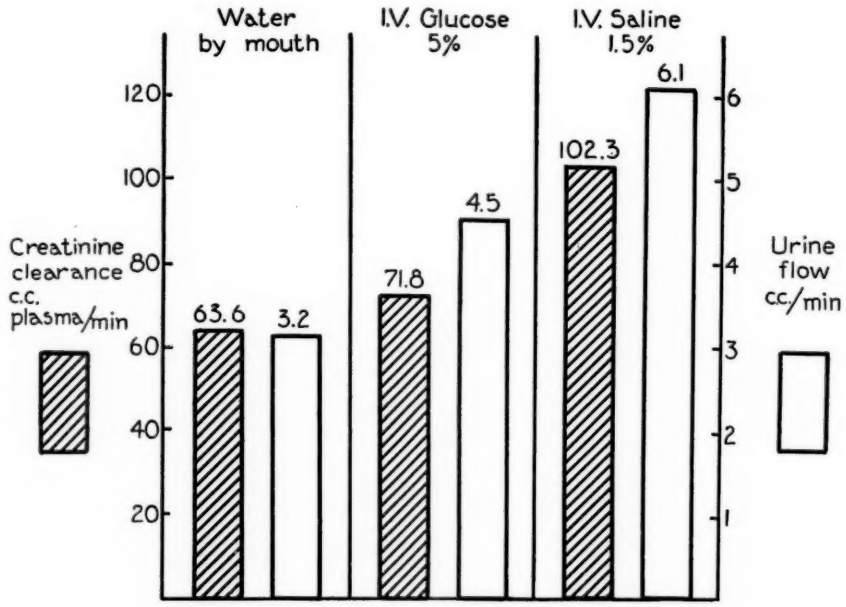

FIGURE 8. *The Effect of the Intravenous Administration of Glucose and Saline Solution on Glomerular Filtration in Normal Dogs.*

TABLE 10. *Nutritional Requirements in the Presence of Nausea and Vomiting.*

Water	Per rectum, subcutaneously and intravenously	Glucose solution, saline solution and lactate solutions
Calories and protein	Subcutaneously	5 per cent glucose solution
	Intravenously	Glucose solution, whole blood, plasma or albumin and amino acids

General considerations. The commoner disorders that occur in conjunction with renal insufficiency are summarized in Table 12. It is obvious that solutions containing sodium and chloride might prove advantageous in the treatment of the first group of disorders (nausea and vomiting, azotemia and dehydration), whereas saline solutions would be contraindicated in most cases in the second group (edema, hypertension and cardiac failure). It is also obvious that whereas a high-protein intake might be advantageous to patients with edema and hypoproteinemia, such a diet would be contraindicated in the presence of azotemia. Improvement can be expected in all cases, however, if glomerular filtration can be increased without placing too great a load on the heart. Disturbances such as those observed in calcium

TABLE 11. *Basic Nutritional Requirements.*

Minimum daily caloric requirement	1200
Calories from 50 gm. of protein (4 × 50)	200
Difference	1000
250 gm. of glucose is needed to provide 1000 calories. Therefore, the administration of 2500 cc. of 10 per cent glucose solution will supply the necessary calories.	

and phosphorus metabolism, creatinine and uric acid have not been discussed individually since, for the most part, they are corrected when glomerular filtration is improved. It is to be noted that no reference has been made to the type of nephritis or renal insufficiency with which the metabolic disorder is associated. This has been purposeful since, with rare exceptions, treatment based on correcting the presenting metabolic disorders will not be altered by the type of underlying renal disease.

TABLE 12. *Commoner Disorders accompanying Renal Insufficiency.*

Anorexia, nausea and vomiting
Azotemia
Acidosis, dehydration
Anemia
Edema
Hypoalbuminemia
Hypertension
Cardiac failure

With these considerations in mind, one can now arrange a group of effective physiologic therapeutic agents for use in the treatment of the metabolic disorders associated with renal insufficiency (Table 13).

I believe that practically all that can be accomplished in correcting the metabolic disturbances that are associated with renal insufficiency can be accomplished by the use of these simple agents.

TABLE 13. *Physiologic Therapeutic Agents Used in the Treatment of Metabolic Disorders associated with Renal Insufficiency.*

Water
Minerals:
Sodium chloride
Sodium bicarbonate and sodium lactate
Aluminum hydroxide
Glucose solutions
Solutions containing protein:
Albumin
Plasma
Whole blood
A diet containing the basic nutritional requirements for health

The problem is to match correctly the disturbances in function with the proper quantity of the indicated agent. Although the extent and progress of the underlying renal disease is the ultimate factor in prognosis, proper therapy may provide time for healing to take place in patients with an acute process, and may rehabilitate for months and even years an appreciable number of patients suffering from the effect of extensive and permanent impairment of renal function.

An outline of therapy suggested by the physiologic needs required to correct the metabolic disturbances that present themselves in patients with renal disease follows. It is not to be presumed that these suggestions present all the effective forms of therapy or necessarily the most effective means of therapy; the outline is presented principally because it is based on physiologic considerations that should indicate appropriate measures.

Metabolic disturbances frequently associated with renal insufficiency. The treatment as outlined is based on the requirements of adolescents and adults. The same principles apply to the treatment of infants and small children, although quantitative requirements may differ appreciably and the administration of parenteral fluids will present greater practical difficulties.

GROUP I

1. *Edema.*

Purpose of treatment: Since in most cases edema is associated with hypoalbuminemia, therapy is directed toward increasing the colloid osmotic pressure of the serum, thereby increasing the plasma volume and aiding in the renal elimination of excess salt and water. A diet of acid-ash residue facilitates sodium loss and hence further reduces the quantity of extracellular fluid.

A. In absence of nausea and vomiting:
   1. Diet, *salt free, high protein* (2–3 gm. per kilogram of body weight).
   2. Fluids, 1500–2000 cc. by mouth daily.
   3. Albumin,* 25 gm. intravenously daily. Plasma is less advantageous because of its high sodium chloride content. Ammonium chloride, mercurial diuretics, thyroid and urea may prove helpful but are not necessary if albumin is available for intravenous use.

B. In presence of nausea and vomiting:
   1. Glucose solution, 1500–2000 cc. 10 per cent intravenously daily.
   2. Protein (preferably albumin), 25–50 gm. intravenously daily.

The changes in body weight in a patient (P. B. B. H. M62053), a white man, 26 years of age, with a nephrotic syndrome of 3 years' duration, which followed the administration of albumin intravenously are presented in Figure 9. This patient had been bedridden for several months prior to the institution of albumin therapy and had failed to improve following treatment with a low-salt diet, high-protein intake, urea administration, occasional injections of mercurials and so forth, although on previous hospital admissions he had responded favorably to these therapeutic measures. It cannot be stated that albumin

*The human albumin used in this study was provided for experimental purposes through the courtesy of Dr. Edwin J. Cohn, Dr. Charles A. Janeway, Dr. Sam T. Gibson and Dr. Lorande M. Woodruff, of the Harvard Medical School. Albumin will not be available for general clinical use during the war because of the needs of the armed forces.

therapy intravenously was responsible for his improvement on this occasion. It can be stated, however, that this patient did present a marked albumin deficiency, and that parenteral administration of albumin solution was a sound method of compensating for the hypoproteinemia.

4. Venesection in presence of increased venous pressure.
5. Intravenous administration of fluids and protein solutions is *contraindicated*. Small quantities of hypertonic glucose solution — that is, 50 cc. of 20 per cent glucose — may be given on evidence of improvement in cardiac status.

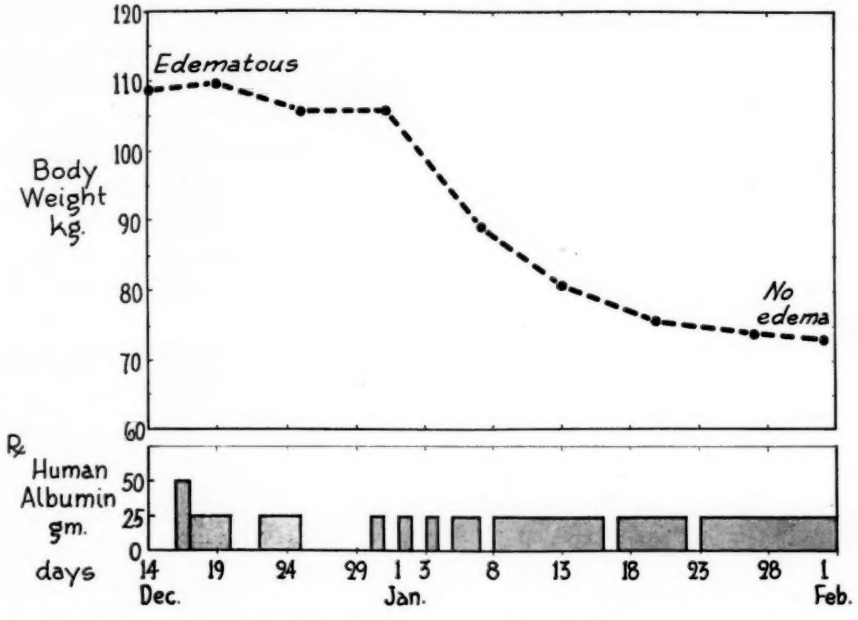

FIGURE 9. *Changes in Weight in a Patient with the Nephrotic Syndrome.*

2. *Edema plus Hypertension.*

Purpose of treatment. To increase the colloid osmotic pressure of the serum and at the same time to prevent overtaxing the heart.

A. In absence of nausea and vomiting:
   1. Diet, *salt free, high protein* (2–3 gm. per kilogram of body weight).
   2. Fluids, 1500–2000 cc. by mouth daily.
   3. Albumin, 25 gm. in *divided doses* intravenously daily.

B. In presence of nausea and vomiting:
   1. Glucose solution, 500 cc. 10 per cent intravenously every 6–8 hours.
   2. Protein (preferably albumin) 8 gm. intravenously every 6–8 hours.

3. *Edema plus Hypertension plus Cardiac Failure.*

Purpose of treatment. To improve the cardiac status and to facilitate the renal excretion of salt and water.

1. Diet, 1000–1500 cc. milk or fruit juice daily.
2. No additional fluids.
3. Digitalis and oxygen therapy.

4. *Edema plus Acidosis.*

Purpose of treatment. To increase the colloid osmotic pressure of the serum and to provide a relative excess of base.

A. In absence of nausea and vomiting:
   1. Diet, 2000–3000 cc. milk daily, with added aluminum hydroxide, or an alkaline-ash diet of relatively high protein content.
   2. No additional fluids if milk diet is employed, otherwise fluids limited to 2000 cc. daily.
   3. Albumin, 25–50 gm. intravenously daily.

B. In presence of nausea and vomiting:
   1. Glucose solution, 1500 cc. 10 per cent intravenously daily.
   2. Sodium lactate solution, 300 cc. 1/6 molar intravenously daily.
   3. Albumin, 25–50 gm. intravenously daily.

If sodium lactic is available in concentrated form (lactic acid *U.S.P.*), 4 cc. (equiva-

lent to 40 cc. 1/6 molar sodium lactate) can be added directly to the glucose solution to advantage, thereby decreasing the total volume of fluid.

5. *Edema plus Acidosis plus Azotemia.*

Purpose of treatment. To increase the colloid osmotic pressure of the serum, to increase glomerular filtration, and hence facilitate the excretion of sodium, chloride, water and end products of metabolism, and to provide a relative excess of base.

A. In absence of nausea and vomiting:
   1. Diet, 2000–3000 cc. milk daily, with added aluminum hydroxide.
   2. No additional fluids.
   3. Protein (preferably albumin), 25 gm. intravenously daily for 3–7 days.
   4. Glucose solution, 50 cc. 20 per cent intravenously for 3–7 days.
   5. If satisfactory diuresis occurs and if edema disappears, give 300 cc. 0.85 per cent saline solution and 300 cc. 1/6 molar sodium lactate intravenously on every 3rd day that protein and glucose solution are given intravenously.

B. In presence of nausea and vomiting:
   1. Protein (preferably albumin), 8 gm. every 8 hours.
   2. Glucose solution, 750 cc. 10 per cent intravenously every 8 hours.
   3. If edema disappears, give 300 cc. 0.85 per cent saline solution and 300 cc. 1/6 molar sodium lactate intravenously every 3rd day on the above regimen.

6. *Edema plus Acidosis plus Azotemia plus Hypertension.*

Purpose of treatment. To increase the colloid osmotic pressure of the serum, to increase glomerular filtration and at the same time to decrease azotemia, to provide a relative excess of base and to prevent overtaxing the heart.

A. In absence of nausea and vomiting:
   1. Diet, 1500 cc. milk daily, with added aluminum hydroxide.
   2. Glucose solution, 500 cc. 10 per cent intravenously once or twice daily. Albumin, 12 gm. intravenously once or twice daily.

B. In presence of nausea and vomiting:
   1. Glucose solution, 2000 cc. 10 per cent intravenously in divided doses daily.
   2. Sodium lactate solution, 300 cc. 1/6 molar intravenously in divided doses daily.
   3. Albumin, 25 gm. intravenously in divided doses daily.

7. *Edema plus Acidosis plus Azotemia plus Hypertension plus Cardiac Failure.*

Purpose of treatment. To improve cardiac status and to provide a diet of low salt content, adequate protein, alkaline ash, adequate calories and minimum fluid.

1. Diet, 1000–1500 cc. milk daily, with added aluminum hydroxide.
2. No additional fluids.
3. Digitalis and oxygen therapy.
4. Venesection in presence of high venous pressure.
5. Administration of fluids and protein solution intravenously *is contraindicated.*

GROUP II

1. *Azotemia.*

Purpose of treatment. To increase glomerular filtration by providing an excess fluid intake; sodium chloride is given to increase plasma volume and to prevent salt depletion.

A. In absence of nausea and vomiting:
   1. Diet with basic nutritional requirements.
   2. Fluids, 3000–5000 cc. by mouth daily.
   3. Glucose solution, 1000 cc. 5 per cent, or 500 cc. 10 per cent, intravenously once daily for 3–7 days.
   4. Sodium chloride, 1–3 gm. (1 gm. enteric-coated tablets) daily in addition to usual salt in diet; after 1–2 weeks of observation it may be possible to increase the supplementary sodium chloride. Excessive gain in weight and development of edema are contraindications.

B. In presence of nausea and vomiting:
   Day 1. Glucose solution, 3000 cc. 10 per cent, and saline solution 1000 cc. 0.85 per cent, intravenously daily.
   Days 2 and 3. Glucose solution, 3000 cc. 10 per cent, and saline solution, 500 cc. 0.85 per cent, intravenously daily.
   Day 4. If nausea and vomiting are not corrected, intravenous protein (plasma or albumin) 25 gm. must be given daily, in addition to the above.

A patient (P. B. B. H. M63653), a white man, 53 years of age, had had a unilateral nephrectomy performed for tumor of the left kidney. At that time, a hydronephrosis

of the right kidney had been demonstrated. Immediately following removal of the left kidney, the patient did well; 4 months later he was readmitted to the hospital because of nausea, vomiting, weight loss and weakness. At this time he was noted to have rather marked azotemia, the blood urea nitrogen being 78 mg. per 100 cc. (Table 14). Urinalysis revealed a low specific gravity, but otherwise was not remarkable. Phenolsulfonephthalein excretion was 7 per cent in 2 hours. Additional sodium chloride and sodium bicarbonate were given on February 22, because the ingestion of large quantities of water by mouth and the administration of intravenous glucose in distilled water precipitated a striking reduction in serum-chloride level. At present this patient is working full time and is being maintained on a daily diet that contains 50 to 60 gm. of protein, 3000 to 4000 cc. of fluids, 3 gm. of sodium chloride and 3 gm. of sodium bicarbonate.

TABLE 14. *Laboratory Data on a Patient with Hydronephrosis.*

DATE	BLOOD UREA NITROGEN	SERUM CHLORIDE	SERUM CO_2 COMBINING POWER	BLOOD PRESSURE	URINE VOLUME	TREATMENT
	mg./100 cc.	*m.eq./l.*	*vol./cent*	*mm. Hg.*	*cc.*	
February 18	78	103	33	180/105	?	Forced fluid and glucose intravenously
22	67	77	38	180/110	3500	As above
March 9	40	102	34	190/105	2000–3000	Sodium chloride (2 gm.), sodium bicarbonate (1 gm.) orally and glucose intravenously
April 26	27	114	53	165/110	2500	Sodium chloride (3 gm.)

2. *Azotemia plus Acidosis.*

Purpose of treatment. To increase glomerular filtration and to provide an excess of base.

A. In absence of nausea and vomiting:
   1. Diet with basic nutritional requirements.
   2. Fluids, 3000–5000 cc. by mouth daily.
   3. Glucose solution, 1000 cc. 5 per cent, or 500 cc. 10 per cent, intravenously once daily for 3–7 days.
   4. Sodium chloride, 1–3 gm. by mouth daily in addition to usual salt in diet.
   5. Sodium bicarbonate, 3–6 gm. daily by mouth; in presence of excessive weight gain or edema discontinue sodium chloride; if edema persists, reduce sodium bicarbonate.

B. In presence of nausea and vomiting:
   Days 1, 2 and 3. Glucose solution, 3000 cc. 10 per cent, saline solution, 500 cc. 0.85 per cent, and sodium lactate, 500 cc. 1/6 molar, intravenously daily.
   Day 4. If nausea and vomting are not corrected, intravenous protein, 25 gm. daily, must be given in addition to the above.

Occasionally one encounters a patient with renal insufficiency in whom the sodium and chloride losses are so great that 10 to 15 gm. of sodium chloride must be given daily. Such a patient may present the signs and symptoms of adrenal insufficiency.[8] Response to sodium chloride and sodium bicarbonate under these circumstances may be nothing less than miraculous, and one may expect to rehabilitate such a patient for a period of 2 to 4 years. Since patients with a requirement of sodium chloride as great as this are very unusual, it is much safer to begin with small doses, that is, 1 to 3 gm. daily. In the absence of excessive weight gain, cardiac enlargement or edema the quantity of supplementary sodium chloride may be slowly increased. During this period of treatment patients should be under rigid observation. In the presence of hypertension supplementary sodium chloride must be administered with great care.

3. *Azotemia plus Hypertension.*

Purpose of treatment. To increase glomerular filtration and at the same time to prevent overtaxing the heart.

A. In absence of nausea and vomiting:
   1. Diet with basic nutritional requirements.
   2. Fluids, 3000 cc. by mouth daily.
   3. Intravenous glucose solution, 50 cc. 20 per cent, intravenously once daily for 3–7 days.
   4. Sodium chloride, 1–3 gm. by mouth daily in addition to the usual salt in diet. *In the presence of hypertension the quantity of supplementary sodium chloride must be followed very carefully.*

B. In presence of nausea and vomiting:
   Days 1 and 2. Glucose solution, 3000 cc. 10 per cent, intravenously; *to be given slowly and in divided doses of not more than 1000 cc. every 8 hours.*
   Day 3. Glucose solution, 2500 cc. 10 per cent, and saline solution, 500 cc. 0.85 per cent, intravenously daily.
   Day 4. If nausea and vomiting are not corrected, intravenous protein, 25 gm. daily *in divided doses*, should be given in addition to the above on alternate days.

4. *Azotemia plus Acidosis plus Hypertension.*

Purpose of treatment: To increase glomerular filtration, to provide an excess of base,

and at the same time to prevent overtaxing the heart.

A. In absence of nausea and vomiting:
1. Diet with basic nutritional requirements.
2. Fluids, 3000 cc. by mouth daily.
3. Intravenous glucose solution, 50 cc. 20 per cent, intravenously once daily for 3–7 days.
4. Sodium bicarbonate, 3–6 gm. by mouth daily.

B. In presence of nausea and vomiting:

Days 1, 2 and 3. Glucose solution, and 2500 cc. 10 per cent, and sodium lactate, 500 cc. 1/6 molar, intravenously, *slowly* and in divided doses of 1000 cc. total every 8 hours.

Day 4. If nausea and vomiting are not corrected, intravenous protein, 25 gm. daily *in divided doses*, should be given in addition to the above.

5. *Azotemia plus Hypoalbuminemia.*

Purpose of treatment: To increase glomerular filtration, to increase serum albumin level without increasing nonprotein nitrogen level, and to prevent edema formation.

A. In absence of nausea and vomiting:
1. Diet with basic nutritional requirements, which includes 1 gm. of protein per kilogram of body weight.
2. Fluids, 2500–3000 cc. by mouth daily.
3. Protein, 25 gm. intravenously daily for 3–7 days.
4. Glucose solution, 500 cc. 10 per cent intravenously daily for 3–7 days.
5. Supplementary sodium chloride, 1–3 gm. daily, on and after the 4th day; in the presence of hypoalbuminemia the quantity of supplementary sodium chloride must be followed very carefully.

B. In presence of nausea and vomiting:

Days 1 and 2. Glucose solution, 2500 cc. 10 per cent, and protein, 25 gm. intravenously daily.

Day 3. Glucose solution, 2500 cc. 10 per cent, protein, 25 gm., and saline solution 500 cc. 0.85 per cent, intravenously daily.

Repeat the programs of Days 1, 2 and 3 in order until nausea and vomiting disappear.

6. *Azotemia plus Hypoalbuminemia plus Edema.*

Purpose of treatment. To prevent the fluids that are used to increase glomerular filtration from accumulating in the body.

A. In absence of nausea and vomiting:
1. Diet, *salt free*; otherwise includes all basic nutritional requirements.
2. Fluids, 2000 cc. daily by mouth.
3. Protein, 25 gm. intravenously daily for 3–7 days.
4. Glucose solution, 50 cc. 20 per cent intravenously daily for 3–7 days.
5. If satisfactory diuresis occurs and if edema disappears, give 300 cc. 0.85 per cent saline solution, intravenously on every 3rd day that protein and glucose are given intravenously.

B. In presence of nausea and vomiting:
1. Protein (preferably albumin), 8 gm. intravenously every 8 hours.
2. Glucose solution, 750 cc. 10 per cent intravenously every 8 hours.
3. If edema disappears, 300 cc. 0.85 per cent saline solution is to be given intravenously every 3rd day on the above regimen.

A patient (P. B. B. H. M63459), a white boy of 14 years of age, was admitted to the hospital on January 31, 1943, with signs and symptoms of acute nephritis. His clinical course during the first three weeks in the hospital was complicated by middle-ear infection and an attack of rubella. His blood urea nitrogen slowly increased to 163 mg. per 100 cc., and on February 19 he was drowsy, nauseated, azotemic, acidotic, edematous and unable to retain fluid or food. It was apparent that intravenous administration of dextrose alone was not helping him; sodium chloride intravenously was contraindicated because of his edema. It appeared that the best form of treatment that could be administered under these circumstances would be small doses of albumin, glucose and lactate solution given intravenously in the hope that some improvement in glomerular filtration might occur as the result of the increase in plasma volume. The albumin was given in divided doses — that is, 12 gm. administered very slowly — and the heart and circulation were watched very carefully. The striking improvement that followed is of great interest (Table 15). It cannot, of course, be attributed necessarily to the treatment. On this regimen, however, it was possible to provide the patient's protein and caloric requirement, and there is no doubt that this was of value in a boy who was undernourished. Of particular interest was the fact that the administration of protein intravenously in the presence of azotemia was followed by a positive nitrogen balance and a decrease in blood urea level (Fig. 10). Again, of special note was the striking decrease in serum chloride level that followed the continued administration of albumin, glucose and lactate solution intravenously and that necessitated the administration of sodium chloride on February 27

and 28 (3 gm. daily for 2 days (Table 15). At present (May 25) this boy is up and about and is being maintained on a diet of 80 gm. of protein daily. The blood urea nitrogen is less than 20 mg. per 100 cc.

7. *Azotemia plus Hypoalbuminemia plus Edema plus Acidosis.*

Purpose of treatment: To prevent the fluids that are used to increase glomerular filtration from

4. Glucose solution, 50 cc. 20 per cent, intravenously daily for 3–7 days.
5. If satisfactory diuresis occurs and if edema disappears, give 300 cc. 0.85 per cent saline solution and 300 cc. 1/6 molar sodium lactate intravenously on every 3rd day that protein and glucose solution are given intravenously.

TABLE 15. *Laboratory Data on a Patient with Glomerular Nephritis.*

DATE	BLOOD UREA NITROGEN	SERUM CHLORIDE	SERUM CO_2 COMBINING POWER	BLOOD PRESSURE	URINE VOLUME	TREATMENT
	mg./100 cc.	*m.eq./l.*	*vol./cent*	*mm. Hg.*	*cc.*	
February 1	117	–	36	132/80	400	Glucose intravenously
4	128	–	–	140/85	1100	As above
10	160	–	–	138/92	1700	As above
13	157	103	38	–	1400	As above
19	163	101	38	134/98	860	As above
20	136	–	–	132/100	580	As above, plus sodium lactate and albumin
23	128	85	48	150/90	1660	As above
26	108	85	40	150/114	960	As above, plus supplementary salt
March 1	84	100	39	170/120	1330	Fluids by mouth
8	47	101	35	160/114	2630	As above
15	56	106	45	144/112	1640	As above
April 14	25	–	–	118/82	3300	As above

accumulating in the body and at the same time to provide for an increased quantity of available base.

B. In presence of nausea and vomiting:
1. Protein (preferably albumin), 8 gm. intravenously every 8 hours.

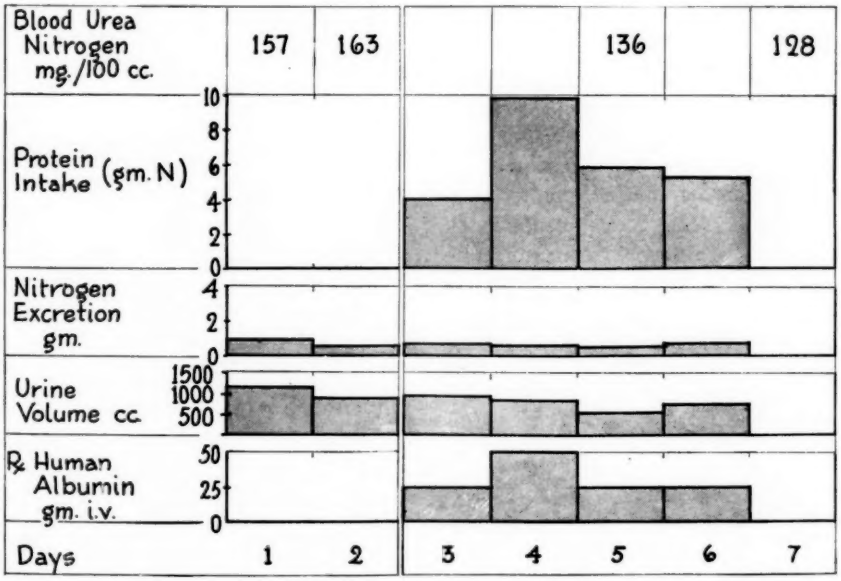

FIGURE 10. *The Effect of Protein Therapy on the Nitrogen Balance and Blood Urea Nitrogen Level in a Patient with Glomerular Nephritis.*

A. In absence of nausea and vomiting:
1. Diet, 2000–3000 cc. milk daily, with added aluminum hydroxide.
2. No additional fluids.
3. Protein, 25 gm. intravenously daily for 3–7 days.
2. Glucose solution, 750 cc. 10 per cent intravenously every 8 hours.
3. If edema disappears, give 300 cc. 0.85 per cent saline solution and 300 cc. 1/6 molar sodium lactate intravenously every 3rd day on the above regimen.

Recently Luetscher and Blackman[9] have described the development of a peculiar serum electrolyte disturbance in patients with uremia that followed sulfonamide administration. In most cases patients were admitted to the hospital in uremic stupor with a history of having had a respiratory infection treated for several days with sulfonamide medication. In the hospital, therapy consisted of large quantities of glucose and saline solutions administered parenterally. With the onset of diuresis, the serum sodium and chloride, which had previously been low, rose to unusual heights, that is, serum chloride 140 milliequiv. per liter and serum sodium 170 milliequiv. per liter. It appeared that the peculiar renal disturbance associated with sulfonamide administration permitted the excretion of water in excess of sodium chloride. If this disturbance could be detected early, the administration of large quantities of fluid by mouth and glucose solution by vein — *with no sodium chloride* — should be effective in rapidly reducing the abnormally high serum levels of sodium and chloride. It is obvious that such disturbances can rarely be detected without the aid of repeated serum chloride and carbon dioxide determinations.

Summary and Conclusions

Much of the confusion that now surrounds the treatment of renal insufficiency might be obviated by adopting a simple, straightforward plan of therapy based on a careful consideration of the agents required to correct the principal disturbances in body chemistry and physiology, rather than by adopting a plan of therapy that is dictated by the nature of the pathologic lesion in the kidney. Such an approach will necessitate familiarity with the chemical and physiologic changes that may be expected to occur in the presence of impaired renal function.

In the outline of a therapeutic regimen designed to improve or correct the metabolic disorders that are associated with renal insufficiency, *quantitative* as well as qualitative considerations require attention, since patients with kidney disease are unable to compensate adequately for either an excess or a deficiency of the indicated therapeutic agents. The therapeutic agents that are required in the treatment of renal insufficiency are few and for the most part represent merely replacement of normal body constituents. Hypoalbuminemia is one of the most characteristic metabolic changes associated with renal insufficiency, and there is a great need for an unlimited supply of albumin for parenteral administration if patients with renal insufficiency are to be treated adequately. A plan of therapy has been suggested for use in the treatment of the commoner disorders associated with renal impairment. The successful application of such a program requires constant and intelligent day-to-day supervision. It also requires the availability of facilities for the determination of blood nonprotein nitrogen, serum chloride and carbon-dioxide combining power. Although the progress and extent of the underlying pathologic process in the kidney is the ultimate factor in prognosis, proper therapy may provide an opportunity for healing to take place in patients with an acute or active process, and may rehabilitate for months and even years an appreciable number of patients incapacitated by the effects of extensive and permanent impairment in renal function.

References

1. *Handbook of Nutrition*. American Medical Association (in press). Chapters appearing in current issues of *J. A. M. A.*
2. Gamble, J. L. *Chemical Anatomy, Physiology, and Pathology of Extracellular Fluid*. 118 pp. Boston: Department of Pediatrics, Harvard Medical School, 1942.
3. Thorn, G. W., and Emerson, K., Jr. Role of gonadal and adrenal cortical hormones in production of edema. *Ann. Int. Med.* **14**:757-769, 1940.
4. Peters, J. P., Wakeman, A., Eisenman, A. J., and Lee, C. Total acid-base equilibrium of plasma in health and disease: acidosis of nephritis. *J. Clin. Investigation* **6**:517-549, 1929.
5. Longcope, W. T. Unpublished data.
6. Elman, R., Brown, F. A., Jr., and Wolf, H. Studies on hypoalbuminemia produced by protein-deficient diets: rapid correction of hypoalbuminemia with ad libitum meat diet. *J. Exper. Med.* **75**:461-464, 1942.
7. Gibson, S. T., Woodruff, L. M., and Janeway, C. A. Unpublished data.
8. Thorn, G. W., Koepf, G. F., and Clinton, M., Jr. Unpublished data.
9. Luetscher, J. A., Jr., and Blackman, S. S., Jr. Severe injury to kidneys and brain following sulfathiazole administration: high serum sodium and chloride levels and persistent cerebral damage. *Ann. Int. Med.* **18**:741-756, 1943.

MENINGOCOCCAL MENINGITIS WITH PURULENT ARTHRITIS*

Report of a Case

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JOINT symptoms are not uncommonly associated with meningococcal meningitis and meningococcemia. Herrick and Parkhurst[1] refer to descriptions by the Massachusetts Medical Society as early as 1810, and Osler[2] notes an 1811 report of epidemic cerebrospinal fever by North in which "swelling like rheumatism in the joints" was described. Both papers give an excellent historical review of the subject.

No adequate statistical data on the incidence of such joint manifestations have appeared since the reviews of Herrick and Parkhurst[1, 3] and Rolleston[4] in 1919. In an analysis of 321 cases in an army camp, the former found a frequency of 4 to 7 per cent. Rolleston collected a series of 902 cases and noted an incidence of 6.5 per cent. The occurrence of purulent effusion necessitating aspiration is not well known. Among 502 cases of meningitis in the British Navy, Rolleston found 24 with arthritis but only 1 had sufficient fluid to necessitate aspiration. Herrick and Parkhurst[1] had 16 such cases out of 321 patients with meningitis.

Subsequent to these reviews, there is little more than an occasional case report of meningococcal arthritis until the appearance of a review of 23 cases by Schein[5] in 1938. Fourteen of these are said to have had joint effusion, although the fluid was aspirated in only 6 cases. Hench, Bauer and their colleagues[6–13] have published eight reviews covering the American and English literature of the past decade in a very thorough manner. The sections on meningococcal arthritis for the years 1939 and 1940 (the latest thus far published) report no purulent arthritis, and only a few cases were noted in the preceding years. Dingle et al.[14] mentioned a case without effusion in 1941. Therefore, it may be justifiable to assume that meningococcal arthritis with purulent effusion is a rarity, and one would postulate that the incidence would be further diminished with sulfonamide therapy.

The case of meningitis with meningococcemia presented here is of interest because of the development of purulent arthritis after the institution of adequate sulfadiazine therapy.

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CASE REPORT

A 52-year-old housewife (B. C. H. 1080039) entered the hospital with chief complaints of confusion, joint pains and rash. She had been well until the evening of the 2nd day before admission. At that time she first complained of feeling chilly and displayed signs of mental confusion. The following day she noted generalized joint and muscle pains and a generalized red rash and developed a stiff neck. On the morning of admission, she was further confused and was unable to recognize the members of her family, but did so following admission. The family and past histories were irrelevant.

Physical examination showed a well-developed and well-nourished white woman lying flat in bed in no acute distress when quiet, but crying out with pain on any motion whatsoever. The temperature was 101.2°F., the pulse 108, and the respirations 38. The patient was oriented as to time and place but sporadically confused concerning the details of her illness. Over her entire body there were petechiae that did not blanch on pressure and that varied in size from 1 to 4 mm. in diameter, as well as petechiae of the bulbar conjunctivas and the buccal mucosa. There were also two 1-cm. hemorrhagic blebs overlying a metacarpophalangeal joint on each hand. The tongue was coated, and the throat and conjunctivas were injected. The lungs were resonant to percussion and clear to auscultation. There was a slight enlargement of the heart to the left, the rhythm was regular, and there was a Grade 1 systolic murmur over the aortic area. Moderate voluntary spasm of the abdominal wall was noted, but masses, localized spasm and tenderness were absent. The spleen and liver were not palpable.

The neck was extremely stiff; Brudzinski's sign was present bilaterally but Kernig's sign was absent. The patient was lying with all joints of the extremities in semiflexion. Gentle, passive motion of fingers or forearms elicited screaming, but attempts to bring out Kernig's sign met with little complaint. There was no swelling, heat or redness of any of the joints. The physical and neurologic examinations were otherwise negative.

On lumbar puncture there was an initial pressure of 250 mm. of water. Gray, turbid fluid was removed in which there were 12,450 white cells per cubic millimeter, with 98 per cent polymorphonuclear leukocytes containing gram-negative, intracellular diplococci. The total protein was 366 mg. per 100 cc., and the chlorides 663 mg. The blood sugar was too low to be read. Admission spinal-fluid, blood and throat cultures were found to contain Group 1 meningococci. Blood studies showed a hemoglobin of 82 per cent (Sahli), 4,260,000 red cells and 16,150 white cells, 75 per cent of which were neutrophils. The nonprotein nitrogen was 24 mg. per 100 cc. The urine was negative except for a ++ test for albumin. A blood Hinton test was negative.

Shortly after admission 5 gm. of sulfadiazine was given by clysis, and an oral dose of 1 gm. every 4 hours. The

temperature began to drop soon after admission and by midnight reached 97°F. (rectal), the blood pressure being 85/62 and the pulse rising at times to 150. The patient did not appear to be in marked collapse, although on one occasion she was sweating profusely and the skin was cool. She was given 30 mg. of calcium pantothenate intramuscularly, and desoxycorticosterone was made readily available, in the event of frank signs of the Waterhouse–Friderichsen syndrome. This state of relative hypothermia and hypotension persisted essentially unchanged until noon of the 3rd day, when the rectal temperature rose, reaching 100.8°F. that night, and the blood pressure returned to normal limits.

Although the blood level of free sulfadiazine was 15.6 mg. per 100 cc. the morning following admission, the blood culture was still positive at that time, but it was negative on all succeeding occasions.

The petechial rash disappeared completely by the 3rd day, at which time a maculopapular, blanchable, extensor-distributed rash appeared over the buttocks, knees, elbows, thighs and pretibial regions, but not on the back or abdomen. These lesions caused much distress because of marked pruritus, but had disappeared by the 7th day.

On the 6th day, the patient complained of leg pains in addition to the aforementioned arthralgia, and both knees were found to be hot, swollen, slightly red and exquisitely tender. The following day, turbid fluid, which clotted almost immediately, was aspirated from both knees. It contained 39,400 white cells per cubic millimeter, with 98 per cent polymorphonuclear leukocytes; no organisms were seen in stained smears, and the fluid was sterile on culture. The free sulfadiazine level of this fluid was 8.6 mg. per 100 cc. Concomitant with the development of the joint effusions there appeared a cluster of eight punctate, hemorrhagic, herpetiform papules on the volar surface of the right forearm. They were nonblanchable and caused no discomfort. These lesions faded slowly and there was only a residual erythema on the 23rd day.

Subsequent lumbar taps were done, all fluids being sterile and chemically and cytologically showing a return toward normal. The last was performed on the 7th day and clear fluid was withdrawn, which was normal in all respects except for 340 white cells per cubic millimeter, with 98 per cent lymphocytes. The knees were aspirated on the 8th, 11th and 14th days, and each time sterile fluid without detectable microscopic organisms was obtained, except for the last tap, when only 0.5 cc. of fluid was available and no studies were possible. The other two samples contained 26,200 and 78,700 white cells per cubic millimeter respectively, of which 99 per cent and 100 per cent were polymorphonuclear leukocytes. On the 11th day, with the patient fasting, joint aspiration and venepuncture were performed concomitantly. The fasting blood sugar was 81 mg. per 100 cc., but the joint-fluid sugar level was too low to be read. The blood protein was 4.86 gm. per 100 cc., and the nonprotein nitrogen 22 mg. The respective joint-fluid levels were 4.70 gm. and 24 mg. per 100 cc. These joints showed much improvement clinically between the 11th and 14th days, as evidenced by decreased pain, tenderness, swelling and limitation of motion.

The joints of the upper extremities had been decreasingly painful on motion, but on the 9th day swelling, tenderness and increased limitation of motion occurred in the left elbow. This joint was not tapped and the reaction subsided concomitantly with that of the knees, though motion was somewhat limited for several days. Heat and passive motion as well as active motion and sporadic splinting were applied therapeutically to the effusive joints. This resulted in almost complete return of function on discharge.

Throughout the first half of the hospital stay, the temperature was of a mildly septic variety, although there was only one spike as high as 103°F. (rectal), and the pulse varied between 80 and 110. The white-cell count ranged from 15,000 to 24,550, and the blood level of free sulfadiazine ranged from 6.0 to 11.0 mg. per 100 cc. The drug was omitted on the 10th day and low-grade temperature continued during the subsequent week, although the joint reaction was obviously subsiding. Sulfadiazine was reinstituted in a daily dosage of 6 gm. on the 17th day and continued for 1 week. At that time the temperature had been flat for 48 hours and the drug was omitted. The temperature remained essentially normal until the time of discharge on the 29th day, and the white-cell count ranged from 9000 to 11,000.

Throughout the course, the patient was oriented as to time and place and variably somnolent, depressed, alert and euphoric. The lungs were persistently clear on physical examination and the cardiac murmur did not change. An electrocardiogram showed only sinoauricular tachycardia (rate, 107). Repeated x-ray films of the chest were negative. Roentgenograms of both knees and both elbows on the 18th day revealed no abnormalities except minimal hypertrophic changes of the left knee.

At the time of discharge, the patient was able to move about with facility and without pain, tenderness or stiffness of any joints except the left elbow. This joint was painless although it was limited to 15° of full extension.

The patient came to the hospital for follow-up examination 3 weeks after discharge and was able to extend the left forearm fully. The temperature was normal and the patient was asymptomatic except for generalized weakness.

Discussion

The points worth considering in this case are the presence of a positive blood culture sixteen hours after institution of sulfadiazine therapy, the appearance of three somewhat different types of skin lesions during the course of the illness and the development of purulent joint effusions five days after an adequate sulfadiazine blood level had been obtained.

In general, the value of sulfonamides in the treatment of meningococcal infections is widely recognized.[10, 11, 14–19] Rapid, dramatic and uneventful recoveries have been noted in cases of acute and chronic meningococcemia and meningitis with and without joint involvement. An exception to this rule is reported as having occurred in a patient with meningitis and meningococcemia who, ten days after sulfadiazine therapy was established, had persistently spiking fever and purulent effusion into a knee joint.[15] He had had no joint swelling on admission. The fluid was sterile on aspiration and the temperature and joint symp-

toms subsided gradually. The patient was essentially well three weeks after admission and was discharged.

The positive blood culture in the present case, in view of the blood level of free sulfadiazine (15.6 mg. per 100 cc.), is not consistent with published clinical observations. This fact was commented on by Dr. Maxwell Finland, who saw the patient in consultation. This finding suggests, perhaps, a relatively refractory strain of meningococcus. Such a phenomenon would explain the elevated temperature until somewhat late in the course of the illness, and the development of a septic focus not evident at the time of admission.

The rash noted on admission was petechial and typical of meningococcal septicemia. The second rash, a maculopapular, blanchable, extensor-distributed lesion appearing on the fourth hospital day, is characteristic of sulfonamide toxicity.[20–23] It is also described by Herrick,[24] in association with joint effusion, as characteristic of meningococcal infection. Stott and Copeman[19] note that there may be such a rash with or without a central, hemorrhagic area in chronic meningococcemia. This eruption was fading on the sixth hospital day, when the evidence of frank knee-joint effusion was first noted. However, the earliest clinical evidence of joint effusion may have been missed, since the polyarthralgia of admission was still present. The appearance of the third rash on the sixth day, a localized collection of eight punctate, herpetiform, hemorrhagic, lesions 2 mm. in diameter on the volar surface of the right forearm, was possibly associated with a sporadic bacteremia. The source of such a bacteremia could not be determined but might have been in the knees, although knee and blood cultures at that time were sterile.

In 1919, Herrick and Parkhurst[1] categorized the various joint phenomena associated with meningitic infection, and their classification has been generally adopted with few modifications.[5, 7, 9, 25] Briefly, they suggest three groups. In *Type A* an acute polyarthritis appears as an initial or early symptom, coincident with the petechial rash, and is usually transitory. There is marked pain and tenderness on motion but little or no effusion, and the symptoms are attributed to hemorrhagic lesions of the joints and synovial structures. This type may be present or absent in a given case and may run into the second form, Type B. This usually occurs about the fifth day of the disease. It is usually monoarthritic, affecting a knee most commonly, and is characterized by signs of purulent effusion. The aspirated fluid is mucinous, purulent, hemorrhagic or any combination of these; it contains 1000 to innumerable leukocytes per cubic millimeter, and meningococci are found by smear or culture or both in about one third of the cases. There is less spasm, pain and tenderness than one would expect from the appearance of the joint, and the signs usually last one to four weeks, with subsequent complete recovery. Type C refers to joint involvement associated with serum therapy, a type which is of little concern here. In a series of 321 cases of meningitis, Herrick and Parkhurst found 14 Type A and 16 Type B cases, although a review of the brief case reports they give leaves one in some doubt as to their rigidity in applying the criteria they set up. Autopsy data are not available on the cases that failed to recover.

Keefer, Parker and Myers[25] have described the gross and microscopic pathology of knee joints in 2 patients with meningococcal arthritis. The first patient, with a proved case of meningococcal meningitis, developed pain, tenderness and slight swelling of the left elbow on the thirteenth day of illness and died on the twenty-first day. The knees were opened for post-mortem examination, although the patient had never shown signs or symptoms of knee involvement. No evidence was found of bone or cartilage destruction, and there was an intact synovial surface layer. The deeper layers of the synovia, however, showed an acute inflammatory reaction and numerous gram-negative diplococci, mostly extracellular. In the second case, a patient with proved meningococcal meningitis, there was pain in both knees, and death on the third day of the disease. At autopsy, there was no excess of synovial fluid in the knee joints and the microscopic picture noted above was observed. However, in addition the surface layer of synovial cells was swollen, necrotic or entirely absent in some places, leaving a surface of granulation tissue and a thick layer of cellular exudate composed of polymorphonuclear leukocytes. There was no extension deep into the capsular tissue. In summary Keefer et al., note: "Meningococcic arthritis is a metastatic lesion involving first the deeper synovial tissues. Later, infection invades the superficial cells with effusion of fluid into the joint cavity and varying degrees of destruction of the cartilage. It is essentially a metastatic acute synovitis." If these tenets are correct, the criteria of Herrick and Parkhurst[1] of Type A as an early transitory, hemorrhagic polyarthritis and of Type B as a later, protracted monoarticular synovitis are incorrect and the typing is superfluous. However, more clinical data correlated with pathological findings are necessary before the classification can be justifiably dismissed. Herrick and Parkhurst's observation of exquisite tenderness of Type A joints and relatively few subjective signs in the

Type B group is not consistent with the pathology reported by Keefer et al. The present case demonstrates no sharp line of demarcation between nonexudative and exudative arthropathy, and in the latter type of involvement the joints were very painful and quite consistent with their clinical appearance.

Comparable symptomatology in swollen joints is reported by Schein.[5] He reviewed 23 cases of meningococcal infection with articular involvement, devoting emphasis to the generally good prognosis that Herrick and Parkhurst gave to such joints. Contrary to this, Schein found that many patients needed orthopedic treatment and 3 patients developed ankylosis. However, at least one of these, judging from the case descriptions, had only some stiffness and no ankylosis. Brinton[26] states that pain and disability are uncommon in meningococcal arthritis and that the inflammation involves the synovial membrane and is not associated with changes of the bone ends. Keefer and Spink[27] report that gonococcal arthritis, which is closely related to the meningococcal form, may cause fibrous, but seldom bony, ankylosis. The greater the amount of fluid that collects in the joint space, the less the chance of destruction, according to these authors. Therefore, large joints like the knee have a relatively better prognosis. The case reported in this paper bears out this thesis in that there was residual stiffness in the elbow for some time after the knees were functionally normal. There were essentially no joint symptoms three weeks after discharge.

In view of the inability to culture organisms from aspirated joint fluid on three different occasions, the pyrexia and the maculopapular rash, it was suggested that the symptoms might have been due to sulfadiazine toxicity. The literature referring to sulfatoxic arthritis is not extensive. Hench, Bauer et al.,[10–13] Keefer,[22] Finland et al.[20] and Spink and Hansen[23] in reviews of toxic manifestations of sulfonamides either mention transient arthralgias or do not include a section on joint symptoms. However, Long et al.[28] in such a review state: "Painful joints have been reported in the course of sulfanilamide therapy and we have noted several patients who have received sulfathiazole have had exquisitely tender, swollen joints. . . . [This] may be puzzling in gonorrhea because of the resemblance to gonorrheal arthritis." This paper has no bibliography. The only case of true joint effusion attributable to sulfonamide toxicity is that of Glicklich and Sherman,[21] in which a patient developed effusion of both knee joints during sulfadiazine therapy. Fifty cubic centimeters of clear, serous, sterile fluid containing a few polymorphonuclear leukocytes was aspirated. The drug was omitted and the effusion subsided, but recurred when sulfadiazine was given again.

An attempt was made to differentiate sulfatoxic arthritis and meningococcal arthritis in the present case on the basis of cytology and chemistry of the aspirated synovial fluid. A number of informative studies on the clinical physiology and pathology of synovial fluid have been made by Ropes et al.,[29] Keefer et al.[27, 30] and Coggeshall et al.[31] Judging by these reports, the fluid in the case presented here was definitely abnormal, having a high count of leukocytes, almost exclusively polymorphonuclear. According to Coggeshall,[31] protein above 3.15 gm. per 100 cc., in synovial fluid is abnormal. Keefer and Spink[27] state that although a synovial-fluid sugar level markedly lower than the blood-sugar level in the fasting state does not necessarily mean an infected fluid, it is suggestive of one. The data on synovial fluid in the present case might obtain in any of a number of arthropathies but are most consistent with one of pyogenic etiology. However, no published material is available that enables one to state dogmatically that such findings could occur in sulfatoxic arthritis.

Therefore, although in a given case no definite etiologic conclusions can be drawn from the characteristics of joint fluid if it is sterile, it was believed on the basis of circumstantial evidence that the present case was one of meningococcal arthritis. After the sulfadiazine had been omitted for a week, it was reinstituted for seven days to rule out any possibility of sulfatoxic arthritis and there were no succeeding symptoms.

Summary

A case of meningococcal meningitis with meningococcemia is presented, with the onset of purulent knee effusions six days after sulfadiazine therapy was begun.

The literature on the incidence, clinical types and pathology of meningococcal arthritis, as well as that of sulfatoxic arthritis, is briefly considered.

References

1. Herrick, W. W., and Parkhurst, G. M. Meningococcus arthritis. *Am. J. M. Sc.* 158:473-481, 1919.
2. Osler, W. Etiology and diagnosis of cerebrospinal fever. *Brit. M. J.* 1:151?-152?, 1899.
3. Herrick, W. W. Extrameningeal meningococcus infections. *Arch. Int. Med.* 23:409-418, 1919.
4. Rolleston, H. Cerebro-spinal fever. *Lancet* 1:645-653, 1919.
5. Schein, A. J. Articular manifestations of meningococcic infections. *Arch. Int. Med.* 62:963-978, 1938.
6. Hench, P. S., Bauer, W., Fletcher, A. A., Ghrist, D., Hall, F., and White, P. Present status of problem of "rheumatism," review of recent American and English literature on "rheumatism" and arthritis. *Ann. Int. Med.* 8:1315-1374, 1495-1555 and 1673-1697, 1935.
7. *Idem.* Present status of problem of "rheumatism" and arthritis: review of American and English literature for 1934. *Ann. Int. Med.* 9:883-982, 1936.
8. Hench, P. S., Bauer, W., Fletcher, A., Hall, F., and White, T. P. Problem of rheumatism and arthritis: review of American and English literature for 1935. *Ann. Int. Med.* 10:754-909, 1936.

9. Hench, P. S., Bauer, W., Ghrist, D., Hall, F., Holbrook, W. P., Key, J. A., and Slocumb, C. H. Present status of rheumatism and arthritis: review of American and English literature for 1936. *Ann. Int. Med.* 11:1089-1247, 1938.
10. Hench, P. S., Bauer, W., Dawson, M. H., Hall, F., Holbrook, W. P., and Key, J. A. Problems of rheumatism and arthritis: review of American and English literature for 1937. *Ann. Int. Med.* 12:1005-1104 and 1295-1374, 1939.
11. Hench, P. S., Bauer, W., Dawson, M. H., Hall, F., Holbrook, W. P., Key, J. A., and McEwen, C. Problem of rheumatism and arthritis: review of American and English literature for 1938. *Ann. Int. Med.* 13:1665-1990, 1940.
12. Hench, P. S., Bauer, W., Fletcher, A., Hall, F., and White, T. P. Problem of rheumatism and arthritis: review of American and English literature for 1939. *Ann. Int. Med.* 14:1383-1448 and 1631-1701, 1941.
13. *Idem.* Rheumatism and arthritis: review of American and English literature for 1940. *Ann. Int. Med.* 15:1002-1108, 1941.
14. Dingle, J. H., Thomas, L., and Morton, A. R. Treatment of meningococcic meningitis and meningococcemia with sulfadiazine. *J. A. M. A.* 116:2666-2668, 1941.
15. Bauer, W., Ropes, M. W., and Short, C. L. Treatment of infectious arthritides with sulfonamide compounds. *M. Clin. North America* 26:1529-1550, 1942.
16. Dimson, S. B. Chronic meningococcal septicaemia: treated with 2-(p-aminobenzenesulphonamido) pyridine. *Lancet* 2:424-426, 1938.
17. Hobson, F. G., and MacQuaide, D. H. G. Treatment of meningococcal meningitis with 2-sulphanilyl-amidopyridine. *Lancet* 2:1213-1217, 1938.
18. Lambie, C. G. Persistent benign meningococcal bacteriaemia: with report of case. *M. J. Australia* 1:1058-1061, 1938.
19. Stott, A. W., and Copeman, W. S. C. Chronic meningococcal septicaemia associated with outbreak of cerebrospinal fever. *Lancet* 1:1116-1118, 1940.
20. Finland, M., Strauss, E., and Peterson, O. L. Sulfadiazine: therapeutic evaluation and toxic effects on 446 patients. *J. A. M. A.* 116:2641-2647, 1941.
21. Glicklich, E. A., and Sherman, D. S. Toxic effects of sulfathiazole used in treatment of chancroidal infection. *Arch. Dermat. & Syph.* 43:992-996, 1941.
22. Keefer, C. S. Toxic reactions following sulfonamide treatment. *New Eng. J. Med.* 226:266-271, 1942.
23. Spink, W. W., and Hansen, A. E. Sulfathiazole: clinical evaluation. *J. A. M. A.* 115:840-847, 1940.
24. Herrick, W. W. Meningococcus infections including meningitis. *Bull. New York Acad. Med.* (Sect. 1) 7:487-501, 1931.
25. Keefer, C. S., Parker, F., Jr., and Myers, W. K. Histologic changes in knee joint in various infections. *Arch. Path.* 18:199-215, 1934.
26. Brinton, D. *Cerebrospinal Fever.* 163 pp. Baltimore: William Wood and Company, 1941.
27. Keefer, C. S., and Spink, W. W. Gonococcic arthritis: pathogenesis, mechanism of recovery and treatment. *J. A. M. A.* 109:1448-1453, 1937.
28. Long, P. H., Haviland, J. W., Edwards, L. B., and Bliss, E. A. Toxic manifestations of sulfanilamide and its derivatives, with reference to their importance in course of therapy. *J. A. M. A.* 115:364-368, 1940.
29. Ropes, M. W., Rossmeisl, E. C., and Bauer, W. Origin and nature of normal human synovial fluid. *J. Clin. Investigation* 19:795-799, 1940.
30. Keefer, C. S., Myers, W. K., and Holmes, W. F., Jr. Characteristics of synovial fluid in various types of arthritis: study of 90 cases. *Arch. Int. Med.* 54:872-887, 1934.
31. Coggeshall, H. C., Bennett, G. A., Warren, C. F., and Bauer, W. Synovial fluid and synovial membrane abnormalities resulting from varying grades of systemic infection and edema. *Am. J. M. Sc.* 202:485-502, 1941.

MEDICAL PROGRESS

CLINICAL CATALYTIC CHEMISTRY

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IT IS the purpose of this report to call attention to the development of a field of laboratory medicine that has been emerging from many diverse sources in the past decade. This field has to do with biological catalysts. A generation ago, Otto Folin, D. D. Van Slyke, S. R. Benedict and others initiated a feverish study of metabolites that culminated in modern clinical chemistry. The metabolites studied — for example the blood sugar — are usually present in concentrations that may be described in milligrams of blood or tissue. Likewise, the daily excretions thereof are frequently measurable in grams or in sizable fractions of a gram-molecule. On the other hand, in recent years clinical studies have shifted more and more toward the description of specific catalysts, the concentrations and excretions of which are described in micrograms. This thousandfold change in parameters is the logical corollary of the nature of catalysts, in that biologic catalysts expedite the turnover of relatively large amounts of metabolite without contributing to the final product. For this reason, although subject to loss through wear and tear and leakage, a little catalyst goes a long way.

The clinical measurement of these catalysts has a special significance for two reasons. In the first place, much more specific information is obtained and therefore the clinical interpretation is the more certain. For example, the blood urea may be elevated under many diverse circumstances and the interpretation of a high blood urea nitrogen value requires an intimate knowledge of the patient and his history. On the other hand, although an intimate understanding of the patient is still essential, an elevation of the so-called plasma "hormonal iodine" is prima-facie evidence of hyperthyroidism.

In the second place, because catalysts control the rate of metabolic turnover, their concentration has a peculiarly dynamic significance. For example, a single determination of the blood sugar records, at best, an equilibrium in carbohydrate metabolism under the conditions prevailing. In contrast, the height of the plasma hormonal iodine reflects directly the rate of dynamic metabolic turnover. In a sense, these catalytic levels are direct-reading speedometers that indicate at any given moment how fast certain specific physiologic systems are operating. For this reason, they tend

The articles in the medical-progress series of 1941 have been published in book form (*Medical Progress Annual.* Volume III. 678 pp. Springfield, Illinois: Charles C Thomas Company, 1942. $5.00).

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more and more to replace the cumbersome functional or tolerance tests now in vogue.

Another advantage of this trend is that the technic employed is often catalytic in nature. Consequently the methods represent advances in two respects. First, they require much less material. For example, the hormonal iodine can be determined in 1 cc. of plasma instead of 10 cc. as required by the older titration method. Secondly, the methods have become more specific. Thus, by selecting the proper strain of yeast, the influence of thiamine on fermentation can be used to estimate the amount of thiamine in a sample of biological material.

These microcatalytic methods require more precise attention to the time of reaction than did many of the older stoichiometric methods. They frequently require micromanometric apparatus or direct-reading colorimeters like the Klett–Summerson.[1] They demand also scrupulous attention to thermostatic control, because the rate of most biochemical reactions is significantly influenced by temperature. In general, these methods have been applied to the following types of substance: Hormones, vitamins, enzymes and electrolytes, including the hydrogen ion. The following examples illustrate some applications and certain precautions peculiar to these procedures.

Hormones

In the case of hormones, two recent developments are of special interest, namely the application of iodide catalysis to the determination of plasma hormonal iodine, and the development of a new photometric technic for determining androgens and related 17-ketosteroids.

Determination of plasma hormonal iodine. This method is the outcome of physicochemical experiments by Sandell and Kolthoff[2] on the rate of reduction of ceric ions by arsenious acid. In its simplest terms the reaction may be expressed thus:

(Yellow) $Ce^{+++} \rightarrow Ce^{++}$ (Colorless)

This reaction is markedly accelerated by iodide ions. Kolthoff and his co-workers studied the various conditions involved, including the concentration of total electrolyte and the temperature. Subsequently Chaney[3] proposed adapting the method to the blood iodine.

Before the plasma is analyzed for iodine, it should be partitioned to separate the protein-bound from the inorganic iodine, as described by Salter.[4] In this way, even accidental contamination with iodine during sampling or subsequent handling may be successfully eliminated. This treatment is conveniently carried out in graduated centrifuge tubes (15-cc. capacity). The reagents may be either those of Bassett, Coons and Salter[5] or those of Man, Gildea and Smirnow.[6]

This method is still subject to improvement, particularly with regard to the preliminary precipitation, ashing and other manipulation of the plasma. Nevertheless, the data obtained in this laboratory on the final determination (Table 1) illustrate its dependability and usefulness. In other words,

Table 1. *Determination of Plasma Hormonal Iodine.*

Functional Range	Equivalent Plasma Concentration (P)	Time for Reaction (T)	Constant (P × T)
	microgm./100 cc.	*min.*	
Myxedema	1	17	20
		22	
	2	9	20
		10	
		10	
	3	6	20
		7	
	4	4.6	20
		5.2	
Normal	5	4.3	22
	6	3.5	22
	7	2.6	18
	8	2.5	20
Hyperthyroidism	10	2.2	22
	12	1.7	20
	14	1.4	20

under standard conditions, the amount of iodine in the aliquot is inversely proportional to the time observed. The value of the constant, of course, depends on the temperature adopted for the procedure and other factors that must be controlled. It should be noted that the normal amount of iodine in 1 cc. of plasma is 0.00000005 gm.

This method, as it is improved, is undoubtedly destined to extensive clinical use. Plasma can even be mailed to laboratories, packaged like Wassermann samples, over considerable distances. Because a single determination of basal metabolic rate is notoriously unreliable, and because Salter, Bassett and Sappington[7] found the plasma hormonal iodine to be a more reliable clinical diagnostic procedure than determination of the basal metabolic rate, this method will ultimately prove important.

Determination of 17-ketosteroids. Pincus's[8] reaction is likewise in use in this laboratory, and is presenting advantages over the Zimmerman type of reaction,[9] employing meta-dinitrobenzene. The latter reagent, unfortunately, reacts with urinary pigments or chromogens to yield false colors that confuse the final determination. Various attempts to correct for this large and variable blank have not proved satisfactory.[10] The values in Table 2,

however, obtained by Dr. Raymond Cahen in this laboratory, indicate that the Pincus reagent (antimony trichloride) may be incorporated in a simplified urinary ketosteroid technic that will facilitate widespread clinical studies of androgen excretion. The colors developed by this reagent are

TABLE 2. *Determination of 17-Ketosteroids.*

AGE	SEX	CLINICAL DIAGNOSIS	EXCRETION OF 17-KETOSTEROIDS (*mg./24 hr.*)					
			ZIMMERMAN			PINCUS		
			α	β	Total	α	β	Total
yr.								
44	F	Addison's disease (critical)	3.7	0.7	4.0	2.2	0.7	3.1
40	F	Addison's disease (controlled)..	7.3	2.2	9.2	3.7	0.9	4.8
26	F	Virilism	20.5	2.2	22.7	18.2	2.7	20.5
26	F	Virilism	24.8	9.3	31.0	14.8	2.4	16.7
21	F	Normal	7.4	0.7	8.3	5.9	0.7	6.0
5	F	Normal	2.2	1.1	3.6	1.9	0.5	2.2

in the blue-green and yellow-green range, instead of the yellow-red range of the Zimmerman reaction.

It will also be observed that the general range of values given by this reagent is lower than that of the Zimmerman reaction. Furthermore, there are qualitative differences between the two reactions in that they do not measure the same ketosteroid configurations. Some of these qualitative differences may be summarized. After heating with antimony trichloride and dilution with glacial acetic acid, an intense blue color (absorption maximum at 610 mμ) is developed by androsterone and its isomers and by androstenone-17. Dehydroisoandrosterone and pregnanediol show weak, yellow-blue colors. The shade of color varies with the diluent. Thus, in chloroform, androsterone shows absorption maxima at 560 and 620 mμ.

Quantitatively, the chief difference from the Zimmerman reaction shown by neutral extracts of urine occurs in the nonalcoholic ketonic fractions. As shown by Table 2, there are also considerable differences in the beta-ketosteroid moiety. In general, however, these discrepancies do not obscure the interpretation of the results in terms of the present concepts of ketosteroid metabolism.

In a previous article I[11] discussed clinical vitamin determinations and pointed out that biologic methods were subject to several sources of error. Since that time, however, intensive work has been done in this field, especially with regard to the vitamin B complex. The field is too large to be reviewed in this article, and I shall therefore mention only the fermentometer method developed by Schultz, Atkin and Frey.[12] This procedure is based on the finding[13] that the rate at which certain yeasts ferment glucose may be increased by the addition of thiamine chloride. Although the original article describes apparatus of gross size, the procedure can readily be adapted to the microrespirometer (Warburg) technic.

Previously, considerable inaccuracy was introduced by the presence in biologic materials of a substance or substances that, like thiamine, also speed up fermentation. This substance, called "PAYF" (pyrimidine accelerating yeast fermentation),[14] may be closely related to or identical with 2-methyl-5-ethoxymethyl-6-aminopyrimidine. At any rate, Schultz, Atkin and Frey[15] have largely eliminated this error by subjecting a second aliquot to the action of sodium sulfite, which destroys the thiamine. Thus the first sample gives thiamine plus PAYF and the second PAYF alone, which may be as large as 40 per cent of the total. By this difference between the samples, the thiamine is determined. The surprising accuracy of the procedure is illustrated by the series of assays in Table 3, performed in this laboratory by Dr. Rigby Roskelley. It must be confessed that this particular series is more consistently accurate than many routine series, but it can be duplicated readily if special care is taken.

Although precautions must be taken to control the sample of yeast used, and to check each type of biologic material by known additions of thiamine examined simultaneously with the unknown, the method is far less irksome than the best chemical methods now available. Furthermore, for most purposes it is quite as accurate.

TABLE 3. *Assays of Known Solutions of Thiamine by Fermentation Technic.*

KNOWN THIAMINE CONTENT	ASSAYED THIAMINE CONTENT
microgm.	*microgm.*
1	0.97
	1.02
	0.99
	0.99
	0.99
	0.99
	1.02
2	1.99
	1.99
	2.00
	2.00
	2.00
	2.00

Suitable methods for other vitamins are now being worked out on the same principle, but they have not yet been so extensively tried as has the thiamine procedure.

HYDROGEN-ION CONCENTRATION

For years physicians and medical students have struggled with the distinction between hydrogen-ion activity (measured as pH) and alkali reserve.

They have learned that a diminution in plasma bicarbonate often indicates acidosis — but not always. This traditional use of carbon dioxide as an index of hydrogen-ion activity in large part grew out of the technical fact that, formerly, direct measurement of plasma pH was extremely difficult. As a by-product of this indirect physicochemical approach to the measurement of hydrogen-ion activity, by means of the Henderson–Hasselbalch equation, a great deal of obscure thinking has flourished in clinics.

In a sense, this Gordian knot has been severed by the development of convenient methods for direct measurement of the acidity of the blood. The actual procedure requires only a few minutes, and only 1 or 2 cc. of blood. No great precaution is necessary against loss of carbon dioxide, beyond collecting the blood under mineral oil. A delay of even two or three hours is permissible before reading. The blood is treated with a suitable oxalate-fluoride mixture to prevent clotting and glycolysis.

The chief disadvantage of the method, which employs glass electrodes, is that the thermoionic amplifying devices required for the apparatus are expensive. They are, however, permanent, and in many laboratories much of the potentiometric equipment is already available.

Several types of apparatus have been described. One of the best procedures, however, is that of Nims.[16] This method has the advantage that it measures the blood pH in terms of its deviation from that of a known buffer. In this way uncontrollable variations in the apparatus or environment are largely compensated.

If one wishes to construct the apparatus from general equipment, one of the better circuits is described by Nims. In addition to a good potentiometer, a thermoionic amplifier is necessary to activate a recording galvanometer, which is used as a nul-point instrument. Several excellent commercial instruments, however, are available in effectively compact form.

In making the determination, which requires only a few minutes, it is important that the blood and glass electrode be maintained at body temperature. This is essential because one is looking for rather small shifts in the activity of hydrogen ions and the temperature coefficient of the thermodynamic equilibrium involved is rather large. The electrode itself should be housed in a special water jacket, through which a stream of water circulates from a thermostatically controlled bath. It is convenient, also, to warm the tuberculin syringe from which the blood is delivered to the electrode. With special care, as little as 0.2 cc. of blood may suffice for the final determination, but 1 to 2 cc. of whole blood is ordinarily used.

Formerly, extreme precautions were taken with fresh blood to prevent loss of carbon dioxide, and the glycolysis of glucose was neglected. It now appears that the formation of lactic acid from the blood sugar is the more important source of error. Accordingly, fluoride or some similar toxic agent is required.

The profound effect of changes in the hydrogen-ion concentration on rates of biologic reactions is so well known that it needs no further comment. Although its importance has been appreciated in clinics, the technical difficulties of measurement have caused greater emphasis to be placed on electrolyte patterns, which often have been misleading because they were incompletely determined. In any large clinic with an active laboratory service, there should no longer be any difficulty in deciding whether acidosis or alkalosis exists. If, however, one or the other abnormality in hydrogen-ion activity is found, it may still be desirable to determine the alkali reserve as a gauge of the severity of the disease and as an aid to therapy or prognosis. In my opinion, however, the problem of laboratory "diagnosis" can now be solved satisfactorily in a few minutes in any well-equipped clinic. Furthermore, the severity of the acidosis or alkalosis can be expressed quantitatively in terms of shift of pH.

Enzymes

In a previous article I[17] referred to the clinical applications of the measurements of blood enzymes, for example acid phosphatase, alkaline phosphatase and amylase. To this list must now be added carbonic anhydrase. Physiologists interested in the rate of carbon dioxide transfer from blood to alveolar air have made many fundamental studies of this biologic catalyst. Among the most informative are those of Roughton and his associates.[18, 19]

Recently at New Haven, Stevenson[20] has made an important clinical application in the study of the newborn. He finds that the concentration of circulating carbonic anhydrase is low in the newborn, and even lower in the premature infant. It is likely to be especially low in such infants as are cyanotic without obvious reason. The mortality rate in these cases is high, but post-mortem examination reveals little cause for death. Certainly, the older notion of congenital atelectasis — that is, failure of the fetal lung to expand at the first gasp — is fallacious in these cases. When, however, such infants are transfused, their blood enzyme becomes elevated rapidly and their cyanosis disappears. Furthermore, the mortality rate is considerably lowered. This striking clinical result

is a fascinating outcome of an abstruse study of chemical kinetics.

The enzyme concerned has been prepared in crystalline form by Scott and Fisher.[21] Its action is to expedite the liberation of carbon dioxide from carbonic acid. Without its influence this gas cannot be unloaded from the blood at a speed commensurate with the rate of the pulmonary circulation. It is interesting that this delay indirectly impedes the uptake of oxygen, for which reason oxygen therapy is of no avail in the infants studied by Stevenson.

Summary

A new field of clinical chemistry is arising that deals with biologic catalysts. The study of these substances involves specialized microtechnics, which are themselves often catalytic. Such measurements afford highly specific information concerning the functional effectiveness of definitive physiologic mechanisms. They also give momentary estimations of the dynamic rate at which such systems are operating.

References

1. Summerson, W. H. Simplified test-tube photoelectric colorimeter, and use of photoelectric colorimeter in colorimetric analysis. *J. Biol. Chem.* 130:149-166, 1939.
2. Sandell, E. B., and Kolthoff, I. M. Microdetermination of iodine by catalytic method. *Mikrochimica Acta* 1:9-25, 1937.
3. Chaney, A. L. Improvements in determination of iodine in blood. *Indust. & Engin. Chem.*, Anal. edition 12:179-181, 1940.
4. Salter, W. T. *Endocrine Function of Iodine.* 351 pp. Cambridge: Harvard University Press, 1940.
5. Bassett, A. M., Coons, A. H., and Salter, W. T. Protein-bound iodine in blood. V. Naturally occurring iodine fractions and their chemical behavior. *Am. J. M. Sc.* 202:516-527, 1941.
6. Man, E. B., Gildea, E. F., and Smirnow, A. E. Serum iodine fractions. *Federation Proceedings* 1:123, 1942.
7. Salter, W. T., Bassett, A. M., and Sappington, T. S. Protein-bound iodine in blood. VI. Its relation to thyroid function in 100 clinical cases. *Am. J. M. Sc.* 202:527-542, 1941.
8. Pincus, G. New color reaction for certain urinary 17-ketosteroids. *Endocrinology* 32:176-184, 1943.
9. Talbot, N. B., Butler, A. M., MacLachlan, E. A., and Jones, R. N. Definition and elimination of certain errors in hydrolysis, extraction, and spectrochemical assay of α- and β-neutral urinary 17-ketosteroids. *J. Biol. Chem.* 136:365-377, 1940.
10. Talbot, N. B., Berman, R. A., and MacLachlan, E. A. Elimination of errors in colorimetric assay of neutral urinary 17-ketosteroids by means of color correction equation. *J. Biol. Chem.* 143:211-218, 1942.
11. Salter, W. T. Chemical measurement and control of clinical vitamin deficiency. *New Eng. J. Med.* 226:649-656 and 688-694, 1942.
12. Schultz, A. S., Atkin, L., and Frey, C. N. Determination of vitamin B_1 by yeast fermentation method: improvements related to use of sulfite cleavage, and new fermentometer. *Indust. & Engin. Chem.*, Anal. edition 14:35-39, 1942.
13. *Idem.* Fermentation test for vitamin B_1. *J. Am. Chem. Soc.* 59:948, 1937.
14. Schultz, A. S., Atkin, L., Frey, C. N., and Williams, R. R. Application of sulfite cleavage of thiamin to yeast fermentation method. *J. Am. Chem. Soc.* 63:632, 1941.
15. Schultz, Atkin and Frey. Cited by Williams, R. R., and Spies, T. D. *Vitamin B_1 (Thiamin) and Its Use in Medicine.* 411 pp. New York: Macmillan Company, 1938.
16. Nims, L. F. Glass electrodes and apparatus for direct recording of PM in vivo. *Yale J. Biol. & Med.* 10:241-246, 1938.
17. Salter, W. T. Clinical blood chemistry in general practice. *New Eng. J. Med.* 224:19-28, 1941.
18. Brinkman, R., Margaria, R., Meldrum, N. U., and Roughton, F. J. W. CO_2 catalyst present in blood. *J. Physiol.* 75: Proc. 3P, 1932.
19. Roughton, F. J. W. Kinetics and rapid thermochemistry of carbonic acid. *J. Am. Chem. Soc.* 63:2930-2934, 1941.
20. Stevenson, S. S. Carbonic anhydrase in newborn infants. *J. Clin. Investigation* 22:403-409, 1943.
21. Scott, D. A., and Fisher, A. M. Carbonic anhydrase. *J. Biol. Chem.* 144:371-381, 1942.

MASSACHUSETTS MEDICAL SOCIETY

PROCEEDINGS OF THE COUNCIL

Annual Meeting, May 24, 1943

THE annual meeting of the Council of the Massachusetts Medical Society was called to order at 7:00 p.m. in the Georgian Room of the Hotel Statler, Boston, on Monday, May 24, 1943, by the president, Dr. George Leonard Schadt, Hampden; 204 councilors were present (Appendix No. 1).

The Secretary presented the record of the stated meeting held February 3, 1943, as published in the *New England Journal of Medicine*, issue of March 18, 1943, and moved its approval. This motion was seconded and it was so ordered by vote of the Council.

Dr. Schadt, at this point, called the death of Dr. Charles S. Butler, treasurer of the Society, to the attention of the Council. He said his death took place on February 23, 1943, after a long illness and that the Massachusetts Medical Society had lost a great friend in his passing. He added that Dr. Butler had a gentle, sweet, kind character, that he was a gentleman of the old school whose life exemplified what was in the poet's mind:

From first beginnings out to undiscovered ends,
There's nothing worth the toil of winning but laughter
and the love of friends.

He spoke of Dr. Butler's great devotion to duty, oftentimes at the expense of his health. At the request of the President, the Council stood in silence for two minutes in tribute to the memory of Dr. Butler.

Dr. Reginald Fitz, Suffolk, moved that the President appoint a committee to draw up suitable resolutions on the death of Dr. Butler. This motion was seconded by Dr. Walter G. Phippen, Essex South, and it was so ordered by vote of the Council.

Dr. Schadt appointed to the committee Dr. William H. Robey, Dr. David Cheever and Dr. Reginald Fitz.

Dr. Harold R. Kurth, Essex North, was recognized. He read a statement (Appendix No. 2)

which had already been published in the proceedings of the February 3, 1943, meeting. This matter was presented at this time as the result of a directive issued by the Council on February 3, 1943. It concerned a difference of opinion as to an individual's acceptability for membership in the Massachusetts Medical Society — the local committee on membership favoring the candidate and the state committee opposed. Dr. Kurth offered the following motion:

> It is the sense of the meeting that the essential responsibility of whether or not graduates of unrecognized or foreign schools shall be admitted to the Society lies in the local membership committees, and that the central committee should concern itself essentially with the responsibility of seeing that no undue pressure has been brought to bear upon the local boards, either to endorse, or to bar, the approval of candidates.

This motion was seconded by Dr. Elmer S. Bagnall, Essex North, who said that he was one of three who examined the candidate in question. He added that in all the years he had been a member of the board of censors he had never seen a more adequate consideration to an applicant for admission to the Society than in this case. He disclaimed any intention of upsetting the by-laws. He said the motion had for its purpose an expression of opinion from the Council that the local committees have better opportunity to know those possessed of qualifications for membership in the Society.

Dr. Roy V. Baketel, Essex North, was recognized. He spoke as follows:

> I have been a censor for quite a period of years. I should hate to tell you just how long. It has been longer perhaps than my memory; and I might say that at our meeting earlier in the month the officers in the district saw fit to give me five years more, so perhaps they do believe that I have tried to treat the applicant for membership in the Society in a reasonably honest, fairminded, square way.
>
> Now I should like to say, in addition to the facts that have already been presented, because to me this is a rather strong fact in our failure to understand the decision handed down by the central committee, that we had, in November, two candidates, both graduates of a Grade C school, both men of foreign extraction, both practicing in Lawrence, both with the same type of recommendation. These recommendations came from men in long practice in Lawrence and its vicinity — men who had had contact with these applicants, men whose advice we believed in, men whose purpose we believed was honest.
>
> The first of these applicants came from a below-standard school. He passed our examination very satisfactorily, and these recommendations, which were practically unanimous, were accepted by the central committee, and the man is today a member of the Massachusetts Medical Society. So far as we knew at the time there was practically no difference — indeed, I am willing to state it a little more strongly — there was no difference in the qualifications of these men in our minds. Because of the fact that they came from subpar schools they were interrogated at the time more closely than might have been the case had they come from Grade A schools. And, further than that, we went into the factor of citizenship to a considerable extent. I know that we are all anxious in the light of the war to be sure that every man who is a member of this society, or a member of any American organization, is a patriotic citizen. We stood fast on those lines as to both of these men. The examination also included very specifically the ethics practiced by these men. We tried to obtain from them their belief in ethics, their attitude toward ethics, their attitude toward their fellowman in the daily pursuit of their practice, their attitude toward the patient under varying conditions; in fact, we tried to delve and did delve more deeply into their consciences than we have done with the average man from the average school.
>
> We were certainly amazed when the report came back that one man was accepted and the other man was rejected. We believe that an injustice has been done. Certain correspondence took place between our secretary and the chairman of the general committee asking what the charge was, what we had left unsaid or undone, if they had information we did not have, and if they knew anything about this man that was against him in any way? We had no answer to that inquiry. We believed that they had no more information than we had, and I think they admitted it; therefore, it was all the harder for us to understand why one man should be accepted and the other man rejected.
>
> As has been stated, we have no fault to find with the provisions of the by-laws. We think they are ample. We think their interpretation needs to be a little broader. We think they should be constructive; and we think, too, that in construing them considerations of a humanizing nature should apply when we pass upon applications of those whose circumstances may not be as fortunate as ours. We tried to assume such an attitude at that meeting, and not only did we want to be human to them but we wanted to be fair and square in every way. We still think these by-laws should not be changed but that interpretation of them should be along a broader basis and on more humanitarian lines.

Dr. George D. Henderson, Hampden, said that one might get the idea from the discussion that Dr. John P. Monks did not back up the central committee. This was a wrong impression. He expressed it as his own thought that all these candidates should be approved by the central committee. He added that he was opposed to the motion.

Dr. Fred H. Allen, Hampden, expressed a desire to know more of the facts before being called upon to vote on the question. He asked that some member of the central committee be asked to state that committee's point of view in this matter.

Dr. Harlan F. Newton, Suffolk, chairman of the Committee on Membership, responded. He said

that there was no question that the proper agent to examine candidates from substandard schools is the local committee. The approval of such committees, however, is often sent to the Committee on Membership without being accompanied with the reasons for such approval, and at times the Committee on Membership gets the feeling that the local committee, while it does approve the candidate, is not particularly keen about him. The question, he added, is simply this, Does the Council wish the local committees to have the entire say as to whether the candidate shall be passed along to the censors or does it want an intermediate check by the Committee on Membership, as at present provided for in the by-laws?" Dr. Newton pointed out that three supervising censors sit with the Committee on Membership and that, in spite of all this, mistakes may happen and may have happened in this particular case.

Dr. Kurth disclaimed animus against the central committee. He added that local committees are in a favored position to probe the background and the ethics of candidates from substandard schools. Because of this it is difficult to understand why the central committee disapproves of a candidate already approved by a local committee.

Dr. Arthur M. Jackson, Middlesex South, expressed the thought that the Council was wasting its time by voting something which attempted to upset the by-laws.

Dr. Curtis C. Tripp, Bristol South, moved that the whole matter be laid on the table. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

Report of Executive Committee

The Secretary, in presenting the report (Appendix No. 3), said the Executive Committee had now been in existence for two years. He added the circumstance which created this committee was indeed fortuitous inasmuch as it has enabled the Society to act promptly in matters pertaining to the war.

The committee, on the recommendation of the Committee on Membership, under the provisions of Chapter I, Section 5, of the by-laws, retired sixteen fellows; under the provisions of Chapter I, Section 7, allowed twelve fellows to resign; under the provisions of Chapter III, Section 3, allowed three fellows to change their membership from one district to another without changing their legal residence; under the provisions of Chapter I, Section 10, readmitted four fellows who had resigned while in good standing; readmitted two fellows who had been deprived of membership for nonpayment of dues, provided they discharged all their obligations to the Society within one month; under the provisions of Chapter I, Section 6, remitted the dues, including those of 1943, of ten fellows; and under the provisions of Chapter I, Section 8, deprived fourteen fellows of membership for the nonpayment of dues.

The committee in conference with the Committee on Membership, under a directive of the Council given on February 3, 1943, recommended the following:

> Fellows of the Massachusetts Medical Society shall not be required to pay further dues during their period of active service in the United States Army, Navy or Public Health Service. Those so requesting may receive the *New England Journal of Medicine* upon request and payment of the $4.00 subscription fee.
>
> The above does not apply to fellows going into active military service during the first year of fellowship in the Society.

The Secretary moved the adoption of the recommendation. This motion was seconded by a councilor.

Dr. F. H. Allen asked why the Marines were left out. It was explained that the Marines had no distinct medical service, such being supplied by the Navy.

Dr. Fitz, calling attention to the fact that there may be a few members of the Massachusetts Medical Society serving with the medical branch of the Canadian Army, offered an amendment to the recommendation so as to include the latter. This amendment was seconded by a councilor. The maker of the motion and its seconder having accepted the amendment, the chair declared it a part of the original motion. The recommendation was adopted by vote of the Council.

The committee reviewed the report of the Committee on Membership with regard to the establishment of a junior membership and approved of its recommendations.

The Council on February 3, 1943, referred to the Executive Committee four recommendations offered by the Auditing Committee of 1943. These recommendations are as follows:

> That the investment of the Society's funds should be under the direction of a professional investment company.
>
> That the report of the accountant should be more complete and include a list of investment transactions.
>
> That the latter should include a statement that the report of the fiscal year is reconciled with the report of the preceding year.
>
> That the duties of the Auditing Committee be turned over to a businessman trained as a bank examiner.

The Secretary said in connection with the first recommendation that the committee received from

the investment firm of Loomis–Sayles and Company an analysis of the Society's investment portfolio and certain advice with regard to a safe and profitable way in which this portfolio might be handled in the future. It was observed that there were too many items in the list, that the total yield was only 2.82 per cent and that the latter might be very materially increased without jeopardizing the principal. This firm would charge for handling the Society's investments 0.5 per cent on the first $300,000 and 0.4 per cent on additional capital.

The Secretary read a letter addressed to Dr. Eliot Hubbard, Jr., by the New England Trust Company in which this bank explained its method of operation under four headings as follows:

> To appraise and review quarterly the list of securities making up the account and to submit in writing the quarterly appraisals with recommendations for changes in investments that seem to be desirable.
>
> To recommend changes of investments between quarterly reviews if desirable.
>
> To confer with the treasurer at any time regarding the Society's investment problems.
>
> To receive as compensation annually 0.2 per cent of the market value of the property in the account at the date of the original appraisal for the first year, and at the date of the anniversary appraisals for subsequent years.

The cost to the Society for handling the portfolio in this manner would be approximately $420 per year.

The Secretary reported that the committee recommended the employment of investment counsel. He moved the adoption of this recommendation. This motion was seconded by a councilor.

The Secretary explained that the authority for the investment of the Society's funds rests, under the by-laws, in the hands of the Treasurer and that the Council at this time should do no more than say to the Treasurer, "We approve of you having at your disposal investment counsel—either that supplied by banks or that furnished by investment-counsel firms." The recommendation was adopted by vote of the Council.

With regard to the second recommendation of the Auditing Committee of 1943, the committee took notice of the fact that auditing committees are already provided with full authority, under the by-laws, to insist on the matters set forth in this recommendation and that, furthermore, it is the opinion of the committee that auditing committees should so insist.

The Secretary moved that the Council concur in these opinions. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

The committee reported that it concurred in the feeling of the Auditing Committee that the interval between the closure of the Treasurer's books and the stated meeting in February is too short to enable such a committee to do the kind of job which should be done. The Secretary announced that under new business amendments to the by-laws would be offered whereby the Treasurer's report and that of the Auditing Committee would be presented to the Council at the annual meeting instead of at the stated meeting in February.

The committee considered the recommendation made by the Committee to Aid the Boston Medical Library. This recommendation would have the Massachusetts Medical Society turn over to the Boston Medical Library the earnings of the Society's building fund. The committee expressed the opinion that a vote of the Council passed in June, 1929, makes this impossible. In connection with this subject, the committee offered two recommendations:

> That the Massachusetts Medical Society acquire the space now occupied by the *Journal of Bone and Joint Surgery*.
>
> That the Massachusetts Medical Society pay to the Boston Medical Library as rent a sum of money, up to $6500 per annum, for its quarters thus enlarged.

The Secretary moved the adoption of the first recommendation. This motion was seconded by a councilor, and it was so ordered by vote of the Council. The Secretary moved the adoption of the second recommendation, and the motion was seconded. There was some discussion as to whether or not the word rent in the recommendation might involve the library in certain troubles anent its tax-free status. Dr. Edwin R. Leib, Worcester, asked if the legal side of the matter had been looked into. The Secretary replied that it had. Dr. David Cheever, Suffolk, confirmed this and said that it had been learned authoritatively that rent paid to a philanthropic, charitable or educational institution and used by that institution, for the purpose for which it exists under its charter, does not constitute rent in the sense of being taxable income. The recommendation was adopted by vote of the Council.

The committee reported that it had reviewed and approved the report of the Committee on Medical Defense and that of the Committee on Expert Testimony. The committee commended the report of the Committee on Public Relations to the attention of the Council.

The committee reported that the Army had approved of a plan to subscribe to the *New England Journal of Medicine*, placing a copy in every Army hospital of twenty-five beds or over. It

defeated a motion to send one hundred copies of the *Journal* to the Navy free.

The committee recommended that stated meetings of the Council begin at 10:00 a.m. and, while there is any business to transact, do not adjourn for lunch until 2:00 p.m. The Secretary moved the adoption of this recommendation. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

The committee acknowledged the receipt of a communication from Dr. Charles F. Wilinsky et al., of the staff of the Beth Israel Hospital, including a protocol governing a plan for the care of the practices of such members of its staff as have entered or will enter the armed forces. The committee recommended that this matter be referred to the War Participation Committee and that this committee report to the Executive Committee at its next meeting. The Secretary moved the adoption of this recommendation. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

The committee recommended that the Committee on Arrangements be instructed to provide for an exhibit and a luncheon meeting on anesthesia and for the suitable advertising of this meeting and exhibit in the program of the annual meeting. The Secretary moved the adoption of this recommendation. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

The committee acknowledged the receipt of a letter from the National Conference on Medical Service, including a resolution which it was intended to offer at the meeting of the House of Delegates of the American Medical Association on June 7, 1943. This resolution called for the creation of a new committee of the American Medical Association made up of certain officers of that organization and so forth. This committee would maintain a Washington office and be supported by an appropriation from the American Medical Association of not less than fifty cents and not more than one dollar for every member of that organization. The committee recommended that this matter be referred to the Massachusetts delegation to the House of Delegates of the American Medical Association without prejudice. The Secretary moved the adoption of the recommendation. This motion was seconded by a councilor, and it was so ordered by a vote of the Council.

The committee reviewed a list of appointments made by the president-elect, Dr. Roger I. Lee, and approved of the same.

The Secretary moved the adoption of the Executive Committee's report as a whole. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

Report of Committees

Committee on Arrangements — Dr. Gordon M. Morrison, Middlesex South, chairman.

Dr. Morrison reported as follows:

> We have no formal report to render. The annual meeting is our report. After having served on this committee one year I found myself precipitated into the chairmanship. Drs. Faxon, Halsted and Sturgis are all in the armed forces. During this last year Dr. Schadt, our president, Dr. Lee, our president-elect, and Dr. Tighe came to our meetings faithfully and helped us out a great deal. The committee that I have been fortunate enough to have work with me this year — Roy Heffernan, Richard I. Smith, Sidney Wiggin and Guy Bailey — could not have been a better committee for any chairman to have work with him. There is just one more person that I want to mention as having been indispensable to our committee last year, and that is our executive secretary, Mr. Robert Boyd. He has done an excellent job.

Dr. Morrison moved the adoption of the report. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

Committee on Publications — Dr. Richard M. Smith, Suffolk, chairman.

No report.

Committee on Membership — Dr. Harlan F. Newton, Suffolk, chairman.

Dr. Newton reported (Appendix No. 4) that his committee, while favoring in principle the establishment of a junior membership in the Massachusetts Medical Society, did not believe that this was the time to do it. He moved the adoption of the report. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

Committee on Finance — Dr. John Homans, Suffolk, chairman.

No report.

Committee on Ethics and Discipline — Dr. Ralph R. Stratton, Middlesex East, chairman.

The chairman reported as follows:

> Your committee has held four meetings during the past year — at which thirty-four cases were discussed. These cases varied from requests for advice as to ethical procedure to complaints of member against member charging violation of the code. Several of these cases, which were involved in court procedures or might be so involved, were laid on the table pending legal action. All other cases were thoroughly investigated and decisions reached based on the data obtained. The most serious one — a charge of violation of Act III, Section 8, of the *Code*

of Ethics of the American Medical Association — was happily settled by an apology being rendered by the defendant to the injured fellow.

It is an interesting thought that throughout the year not one member has been asked to resign, or his name sent to the President for admonishment. All cases have been settled in committee and the decisions accepted by the fellows concerned.

At present there are before the committee two complaints of exorbitant charges against fellows, one case of improper advertising and three serious complaints of violation of the *Code of Ethics*. These are being thoroughly investigated and will be reported at a future meeting.

I cannot close this report without expressing the appreciation of his fellow committee members to Dr. William Brickley for his very kind gift of recent date, the pleasure of which we have sampled already.

Committee on Medical Education — Dr. Robert T. Monroe, Norfolk, chairman.

No report.

Committee on Public Health and Subcommittee on Public Education — Dr. Francis P. Denny, Norfolk, chairman.

In the absence of Dr. Denny, the Secretary read the report, which is as follows:

The series of broadcasts carried on by these committees with the title "Green Lights to Health" were discontinued in March, 1942.

This spring, at the instigation of the Massachusetts Department of Public Health, and with the offer of a favorable hour by Station WEEI, 4:30 to 4:45 p.m. on Wednesdays, the committee decided to arrange for a series of ten broadcasts. This series has been given the title "Health on the Home Front," and was started on April 7 and will end on June 9.

We are very grateful to the members of the Society who consented to give these broadcasts despite the many demands on their time.

The Secretary moved the adoption of the report. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

Committee on Medical Defense — Dr. Arthur W. Allen, Suffolk, chairman.

Dr. Edward D. Gardner, Bristol South, offered the report, which is as follows:

At present, there are seven cases pending. During the past year, two cases have been disposed of — one, for lack of prosecution; the other, with a companion case, was nonsuited when it was reached for trial.

There have been two new cases entered during the past twelve months.

We wish to call attention again to the possibility of malpractice suits against fellows while in military service. We also urge that all men re-establish their insurance protection at the earliest possible moment on return to practice in case they have dropped their protection while on military duty.

Dr. Gardner moved the adoption of the report. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

Committee on Society Headquarters — Dr. William H. Robey, Suffolk, chairman.

No report.

Committee on Industrial Health — Dr. Dwight O'Hara, Middlesex South, chairman.

In the absence of Dr. O'Hara, the Secretary read the report, which is as follows:

At the last meeting of the Council the Committee on Industrial Health announced that it would hold another all-day meeting similar to that held at the Harvard Club last November. This was done, with an entirely new program, on April 24, 1943. One hundred and sixty registered, most of whom were present for the luncheon at noon, which was addressed by Dr. Alice Hamilton, and at which we were also honored by the presence of Dr. Robert H. Parry, health officer of Bristol, England, and by the presence of President Schadt.

The committee has continued to keep in touch with the State Department of Labor and Industries and with the State Department of Public Health, and has made a few fresh contacts with representatives of the Associated Industries of Massachusetts. The committee has advised several employers concerning medical services and has been able to aid in the placing of a few physicians in industrial medical work. It has met with a representative of the Council on Industrial Health of the American Medical Association, has prepared papers for publication in both medical and industrial journals, has delivered a broadcast on industrial health in co-operation with the Committee on Public Health, and has endeavored to be as active as possible on all fronts during this period of unprecedented industrial output.

The Secretary moved the adoption of the report. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

Massachusetts Committee on Procurement and Assignment — Dr. Reginald Fitz, Suffolk, chairman.

This report (Appendix No. 5) contained the following resolution:

WHEREAS, The War Manpower Commission has announced that there is immediate need for more physicians to serve as medical officers in the armed forces of the United States; and

WHEREAS, The War Manpower Commission has announced that Massachusetts should supply more medical officers than have so far been commissioned from the state; and

WHEREAS, A plan has been suggested by the War Manpower Commission through which the enrollment of medical officers may be accelerated with the help of county or district medical societies in certain states; therefore, be it

RESOLVED, That reviewing committees be established by each district society, the members of which shall be nominated by the district-society presidents and appointed by the president of the Massachusetts Medical Society. Such committees shall serve for the general purposes outlined in this report.

Dr. Fitz moved the adoption of the resolution. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

Dr. Fitz moved the acceptance of the report as a whole. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

Committee on Public Relations — Dr. Elmer S. Bagnall, Essex North, secretary.

Dr. Bagnall reported as follows:

The committee has conferred with the president of the Massachusetts Nurses Association and made some progress toward meeting and understanding mutual problems.

The Ellison subcommittee on relations with the Industrial Accident Board has made progress and has reason to believe the proposals made by us are being favorably considered by the board and the insurance carriers.

In this emergency we accept the obligation to initiate remedies to correct, so far as practicable, manifest deficiencies in the distribution of medical care by enlisting co-operation of all agencies concerned. Each district public relations committee should invite more intelligent co-operation of the public by whatever form of ethical propaganda best suits local needs. The doctor should exercise judgments based on the whole public interest when considering the request by his patient for hospital occupancy or for full-time special nursing. Serious nursing shortages exist in many communities. The district public-relations committee should stimulate formation of district nursing councils as outlined in a well-prepared prospectus concerning organization methods and component representation, which is procurable from Massachusetts State Nursing Association, 420 Boylston Street, Boston. Local telephone exchanges need better understanding of the problems involved in *so-called* versus *real* emergencies. We might attempt a practical definition of what is and what is not an emergency. Each district public-relations committee should move toward improvements in this field. The district public-relations committee should exert all reasonable efforts to prevent default of doctors in response to real emergencies even though our physical resources have been strained by the demands made upon them.

Dr. Bagnall moved the adoption of the report. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

Subcommittee on Tax-Supported Medical Care — Dr. Bagnall, chairman.

Dr. Bagnall reported as follows:

Because your chairman is able in his capacity as chairman of the Medical Advisory Board of the Department of Public Welfare to handle such problems as are now arising in this field no meetings of the committee have been needed.

Policies had been agreed upon last year by the department and the Society. The department is endeavoring to extend these policies to local administration of the welfare medical care.

Dr. Bagnall moved the adoption of the report. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

Subcommittee Concerned with Postpayment Medical-Care Costs through Banks — Dr. Bagnall, chairman.

Dr. Bagnall reported as follows:

The Massachusetts Bankers Association has a committee co-operating with our committee to get a plan in operation in October. It is to supply the applications, note forms and so forth. The Massachusetts Medical Society is to endeavor to inform its members regarding the purpose and machinery of the plan. Suitable propaganda can be made available to the doctor by the Society for informing the patient about this means of budgeting for payment of the costs of medical care. All banks dealing with consumer credit will co-operate by taking up the notes and paying the doctor directly if the patient's credit justifies.

There are about 4600 active fellows in the society and it would cost about $550.00 to inform the doctors and to provide them with machinery to utilize its facilities.

The Council, at the last annual meeting, authorized the institution of this project. We recommend that the president be authorized to add to the committee enough additional members to introduce the plan properly when the appropriation is approved by the Committee on Finance.

By way of additional information Dr. Bagnall pointed out that one year ago the Council adopted the principle of postpayment medical care as suggested by the National Shawmut Bank and authorized the Committee on Public Relations to proceed to put the plan into operation. Dr. Bagnall explained that this matter was not referred to the Committee on Public Relations or to the Executive Committee because of lack of time.

He moved the adoption of the report. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

Committee to Meet With the Medical Advisory Committee of the Industrial Accident Board — Dr. Daniel J. Ellison, Middlesex North, chairman.

No report.

Subcommittee on Prepayment Medical-Care Costs Insurance — Dr. James C. McCann, Worcester, chairman.

The report (Appendix No. 6) was presented by Dr. McCann.

Dr. Fitz moved its acceptance. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

Committee on Legislation — Dr. Brainard F. Conley, Middlesex South, chairman.

This report, which was offered by the chairman, is as follows:

When the Great and General Court began its session for the year 1943, His Excellency, Governor Saltonstall, made the request, that because of the war, the Legislature complete its work within as short a time as possible. As a result of this request there appeared on the front page of every weekly issue of the Bulletin of Committee Work of the General Court, the following paragraph, to quote:

> Because of the present wartime necessity to expedite legislative business, the time allowed for arguments may be limited at all committee hearings. It is therefore urged that all arguments be concisely stated, and that detailed or supplementary facts be submitted in writing. All information submitted will receive careful consideration. The co-operation of all interested parties in furthering this method will be most helpful.

Your committee wishes to report strict compliance in every respect with this pattern of procedure.

We also wish to report that this committee is very appreciative of the courteous and intelligent co-operation extended by the members of the joint Committee on Public Health of the Legislature.

The *New England Journal of Medicine* of May 13, 1943, contains a bulletin of as much committee work as had been acted upon up to the latest date possible of printing before this meeting of the Council. As soon as the present session of the Legislature closes, which will in all probability be within the next two weeks, all the bills of interest to the Society will have been acted upon and a completed list will be published in a similar manner.

In the report of this committee to the Council in the February meeting we acknowledged our cognizance of the anticipated decrease of income to the Society for this year. We have continued our careful watching of expenses and have endeavored to keep them down, in spite of the fact that the amount of work done was, little, if any, less than in previous years. We hereby submit for your information the following financial savings.

In order to reveal the amount of money saved, we must first of all call to your attention that the legislative committee spent, in round numbers, $3900 during the last biennial session. Of this amount $1500 was spent for legal counsel. This year this committee made an arrangement whereby we could get what we considered the best possible legal advice and pay for only what we needed. Therefore, we found that we needed only $50 worth of legal advice. This advice has been received and paid for, and we have saved $1450. That same year the amount of $218 was paid to the Legislative Reporting Service. To date, and the session is about over, we have received all the help we needed from that source and at a cost of approximately $70. Here is a saving of $148. Copies of the *Who's Who in the Legislature* cost us $45, just the same as two years ago. Travel expense, telephone, telegraph, clerical hire and incidental expenses have amounted to slightly over $50. In other words, this year your committee on legislation will have completed its work with a minimum of expense, namely, about $220, as against $3850 two years ago — a saving of $3630.

Dr. Conley moved the acceptance of the report. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

Committee to Examine WPA Records — Dr. Guy L. Richardson, Essex North, chairman.

Dr. Richardson reported as follows:

> Work Projects Administration is at an end in Massachusetts. Since our last report to the Council we have not been called upon to adjust any differences between physicians and the WPA office.
>
> The President of the United States has said that the WPA is entitled to an honorable discharge. Your committee requests its discharge, fearful it may be said of us as was said editorially of WPA itself. I quote: "We would go a little farther than the President. We would say, not only that the WPA is entitled to an honorable discharge, we would say it has been entitled to one for a long time."

Dr. Richardson moved the acceptance of the report and the discontinuance of the committee. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

Committee on Cancer — Dr. Ernest L. Hunt, Worcester, chairman.

This report (Appendix No. 7) was offered by Dr. Hunt. It spoke of a meeting of the committee at which Mr. H. D. Fish, assistant managing director of the American Society for the Control of Cancer, Incorporated, presented a plan for popular education, in co-operation with the state program, which latter program has been backed by the experience and facilities of the Society. The committee thought that this plan was not expedient at this time. Dr. Herbert L. Lombard was present at this meeting and spoke of a two-day symposium on cancer that had taken place. This conference was held because it was realized that some type of cancer education should go on during the war. Out of it came a booklet, known as *Cancer: The what, whither, how.*

This report spoke of the improvement in the cancer situation in Massachusetts during 1942 in light of the report by Dr. Simmons on state-aided cancer clinics. It emphasized the fact that there must be no letup in the cancer-control effort because of the hardships imposed by the war.

The report concluded with the following statement: "It is our conviction that there is no substitute for the well-educated, experienced, conscientious doctor."

Dr. Hunt moved the adoption of the report. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

Committee on Postgraduate Instruction — Dr. Fitz, chairman.

No report.

Military Postgraduate Committee — Dr. W. Richard Ohler, Norfolk, chairman.

This report (Appendix No. 8) spoke of eleven exercises that were held at Fort Banks, ten at Camp Edwards, one at the Portsmouth Navy Yard and ten at Westover Field.

The committee expressed the view that this work had been very much worth while and that the officials of the Army and Navy felt likewise.

The committee offered the following recommendations:

> That the committee be continued and directed to enlarge its activities as far as practical.
>
> That an invitation be extended to the other New England state medical societies to co-operate in this project and that all medical officers of the Army and Navy in New England be offered postgraduate instruction in some form.
>
> Further, that the Massachusetts Medical Society underwrite the expense of this effort.

Dr. Ohler moved the acceptance of the report and the adoption of the recommendations. This motion was seconded by a councilor.

Dr. Morrison asked how this postgraduate work fitted in with the postgraduate work of the federal government.

Dr. Ohler answered that he presumed that Dr. Morrison was referring to the plan announced in the *Journal of the American Medical Association*, issue of May 1, 1943. He added that this plan was under the auspices of the American Medical Association, the American College of Physicians and the American College of Surgeons and that it was still in the process of organization. He also said that in Boston, Philadelphia and Chicago such plans were already in operation and that it will be the policy of the committee controlling the plan, referred to by Dr. Morrison, to turn his work over to the groups which are already functioning.

The Secretary asked if he was correct in his understanding that the Military Postgraduate Committee was asking the Massachusetts Medical Society to underwrite the expenses incident to courses given in other states. Dr. Ohler answered in the affirmative, adding, however, that it was hoped that other societies in New England would ultimately share the expense. He said that the part of the Society, so far as it was related to other states, would be incidental only to getting the work started.

Dr. Carl Bearse, Norfolk, asked if it were not a bit dangerous to underwrite the project without knowing exactly how much money might be needed. Dr. Ohler expressed the thought that the $500 would probably more than cover the expense.

Dr. Ohler amended his original report so as to add at the end of the third recommendation the words "in an amount not to exceed $500." The seconder accepted this amendment. The motion as amended was adopted by vote of the Council.

Committee on Physical Therapy — Dr. Franklin P. Lowry, Middlesex South, chairman.

Dr. Lowry reported as follows:

> This committee is primarily interested in research and education.
>
> During the past year it can report nothing completed in research.
>
> It has, however, sponsored a program of lectures in physical therapy for the medical personnel at Fort Devens.

Dr. Lowry moved the acceptance of the report. This motion was seconded, and it was so ordered by vote of the Council.

Committee on Expert Testimony — Dr. Frank R. Ober, Suffolk, chairman.

Dr. Ober reported as follows:

> I thought that it was inadvisable to make a formal report, the reason being that there are fifty-three articles being published on forensic medicine under the editorship of Dr. Hubert W. Smith. Several of these articles have already appeared in the May number of the *Annals of Surgery*. A number are coming out in the *Yale Law Review*, the *Harvard Law Bulletin*, the *Rocky Mountain Bulletin* and the Lippincott *Clinics*. These are all being edited in book form. As soon as all the articles have been published in the magazines, they will be put in the hands of the members of the committee, and we shall then consider plans of procedure. It seemed very wise to wait until all this new material had been published before the committee commenced its study.

Dr. Ober moved the acceptance of the report. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

Committee on Automobile Insurance Claims — Dr. Henry C. Marble, Suffolk, chairman.

No report.

Committee on Convalescent Care — Dr. T. Duckett Jones, Norfolk, chairman.

No report.

Committee to Study the Practice of Medicine by Unregistered Persons — Dr. Richard Dutton, Middlesex East, chairman.

No report.

Committee to Meet with the Massachusetts Hospital Association — Dr. Walter G. Phippen, Essex South, chairman.

No report.

Committee on Maternal Welfare — Dr. Judson A. Smith, Suffolk, chairman.

No report.

Committee on Rehabilitation — Dr. William E. Browne, Suffolk, chairman.

No report.

Committee to Aid the Boston Medical Library — Dr. William H. Robey, Suffolk, chairman.

No report.

Committee on Ways and Means to Conserve Physicians' Energies — Dr. Bagnall, chairman.

No report.

War Participation Committee — Dr. William B. Breed, Suffolk, chairman.

No report.

Committee on Nominations — The committee was composed as follows:

W. D. Kinney, Barnstable; P. J. Sullivan, Berkshire; W. H. Allen, Bristol North; E. F. Cody, Bristol South; G. L. Richardson, Essex North; Bernard Appel, Essex South; R. R. Stratton, Middlesex East; W. H. Sherman, Middlesex North; Dwight O'Hara, Middlesex South; D. D. Scannell, Norfolk; D. B. Reardon, Norfolk South; W. H. Pulsifer, Plymouth; W. B. Breed, Suffolk; W. F. Lynch (alternate), Worcester; and B. P. Sweeney, Worcester North (there were no representatives from the Franklin, Hampden and Hampshire districts).

Dr. Walter H. Pulsifer, Plymouth, reported for the committee as follows:

President: Dr. Roger I. Lee, Boston
Vice-president: Dr. Daniel B. Reardon, Quincy
President-elect: Dr. Elmer S. Bagnall, Groveland
Secretary: Dr. Michael A. Tighe, Lowell
Treasurer: Dr. Eliot Hubbard, Jr., Cambridge
Assistant treasurer: Dr. Norman A. Welch, West Roxbury
Orator: Dr. Joseph C. Aub, Boston

The President asked if there were any nominations from the floor. There being none, he requested the Secretary to cast one ballot bearing the names and designations of the above. The Secretary announced that he had complied with this request, whereupon the President declared, amid great applause, the election of the officers for 1943-1944 as above listed.

Appointment of Committees

Dr. Roger I. Lee, president-elect, in announcing the list of committees for 1943-1944, said that the personnel of these committees was for the most part the same as that of 1942-1943. He moved that the list, which had already been approved by the Executive Committee, be likewise approved by the Council without being read. This motion was seconded by a councilor, and it was so ordered by vote of the Council. (The list will be published with the proceedings of the Society in the July 22 issue of the *Journal*.)

New Business

At this point in the meeting Dr. Peirce H. Leavitt, vice-president, assumed the chair and Dr. George Leonard Schadt was recognized. He spoke as follows:

> The subject I am going to discuss with you is something that has been in my mind all year long, but it seemed to me that I should wait until the annual meeting of the Council before bringing it out. I shall present the plan I have in mind and shall ask Dr. Roger Lee, the incoming president, to exercise his prerogatives in appointing a committee.
>
> The last war, as you know, was a comparatively short war. Many of us had been in practice five, ten or fifteen years when we went away. I happened to be in service for twenty-two months; some of us were in for ten, twelve or fourteen months — I believe the average was fourteen months. We got back into practice quickly. Some of us were lucky and had little trouble, but a lot of the men had difficulty getting started. I know because I talked with a great many of them. They needed a car, or they needed an office.
>
> I can think of the story of one man, named Bill Smith, who came back and was quite a hero. He had been wounded severely and was brought home, and when he came back he met John Jones, a banker, who thought Bill Smith was a wonderful hero and told him what a fine fellow he was. And then he said to Bill Smith, "What can I do for you?" Bill replied, "I should like to see if I can borrow a little money." The banker said, "Of course you can. I'll be glad to give it to you. How much do you want?" "Twelve hundred dollars." "By the way, what about collateral?", John Jones asked. Bill Smith said, "This will be only for a year." However, the banker looked at him with a cold eye and said, "If you haven't any collateral I can't let you borrow the money." That was poor Bill Smith's position. He was a great hero, he had fought for his country in the war and he had been wounded, but he never got the $1200 — at least not from the banker.
>
> A lot of men came back wounded and could not go into the type of practice they had engaged in before. They would have liked very much to have gone into something like refraction, but they did not have the money and they could not do it. As the result of the war many men lost out, not because of their service, but because of the fact that they could not afford to rehabilitate themselves.
>
> I think we have a great opportunity in the Massachusetts Medical Society today. This war is different. It is a long war. It has already lasted, so far

as we are concerned, nearly a year and a half. It is going to last another two or three anyway. Our friends have gone, men who have been in practice five, ten or fifteen years. Many of those men are coming back wounded or in ill health. A surgeon may never be able to operate again. An internist may never be able to do that type of work. If he could do refraction or skin work, if he could get started with six or ten months' headway, it would be a great thing for him. A great many coming back are going to need special treatment until their wounds and their nerves are healed, and a majority of them are coming back without collateral.

My plan—and I have talked it over with a few men in the Society—is one to develop a fund in the Massachusetts Medical Society. Call it the Postwar Rehabilitation Fund. Let it run something on the order of the Morris Plan, any member of the Society being able, without embarrassment and without collateral, to make application for a loan. That application is endorsed by one or two members of the Society. The amount would be limited, and each application would receive careful consideration. Such a scheme could be easily put into effect. To come to us rather than to an otherwise affable banker or to a loan shark would save our friends and our colleagues a tremendous amount of embarrassment.

I can see that all this needs a lot of study, and all that I am asking of you tonight is to appoint a committee for that purpose.

I can visualize a man coming home and wanting to go to Harvard or Boston University or Tufts for postgraduate study. Incidentally, possibly the medical school should cut the fee in half or cut it out entirely for the ex-service man. The amount of the borrowing might be $1000 or $1500. That can be decided. The time in which the loan has to be paid might run one or two years. That, too, would be decided by a committee.

I can visualize further. I can see men who are not coming back, who are leaving wives, and children who need to be educated. There are quite a number of paths this plan might follow.

You say, "Well, where are you going to get the money?" I think the preliminary fund could be obtained by assessing every member of the Massachusetts Medical Society who had not had the privilege of serving with the armed forces, because of age, disability or another reason, $10, with the opportunity of contributing more if he so desired. I think we could easily get $50,000 to start with, and if we needed more we have a backlog of over $200,000. Why does the Massachusetts Medical Society need $200,000 in bonds? That is something which has been a source of worry to me all year long. We have done nothing with it. It has just been invested. There must be something constructive we can do with the money instead of having it lie in our treasury.

Dr. Schadt moved that the incoming President, Dr. Roger I. Lee, appoint a committee of fifteen to study the desirability and feasibility of such a plan and to submit reports of progress at the October and February meetings of the Council and a final report at the annual meeting in May, 1944. This motion was seconded by Dr. William B. Breed, and it was so ordered by vote of the Council.

Dr. Leavitt read the following obituary:

> Dr. Hanford Carvell, a member of the Council from the Essex South District, died on February 15, 1943, at the age of sixty-seven.
>
> Born in Marysville, New Brunswick, Dr. Carvell received his degree from the Baltimore Medical School in 1910. He was a member of the American Medical Association.
>
> His widow, two daughters and a brother survive him.

Dr. Leavitt asked the councilors to stand in silence one minute in tribute to the memory of Dr. Carvell. The councilors complied with the request.

Dr. Schadt resumed the chair.

Dr. Donald Munro, Suffolk, moved that the following amendments to the by-laws of the Massachusetts Medical Society be adopted:

> That Chapter IV, Section 4, of the by-laws of the Massachusetts Medical Society be amended by striking out the word "stated" and inserting the word "annual" and deletion of the words "in February."
>
> That Chapter VI, Section 5, of the by-laws of the Massachusetts Medical Society be amended by striking out the word "February," as it appears at the top of page 21, and inserting in its place the word "annual."

This motion was seconded by a councilor.

Dr. Munro explained that the purpose of these amendments was to allow the Auditing Committee sufficient time to do the job that it was supposed to do under the by-laws. The motion was adopted by vote of the Council.

The President announced that these amendments will be offered at the annual meeting of the Society in 1944 and that they will not be effective until favorably acted on by that body.

Dr. Munro moved the adoption of the following motion:

> That the Committee on Publications be empowered to offer to the Navy Department 100 free one-year subscriptions to the *Journal*, to be distributed as the Navy may decide.

This motion was seconded by a councilor.

In connection with this motion, Dr. Munro said that he was offering it at the request of Dr. John Fallon, who was ill and consequently could not be present. He added that he personally favored the motion. He said that he had been informed by the editors of the *Journal* that the adoption of this motion would add but five cents to the cost of the *Journal* for each member per year. He em-

phasized how profitable this would be to the *Journal* from the standpoint of advertising.

Dr. Fitz asked if this had been discussed by the Executive Committee. Dr. Schadt replied in the affirmative and added that the committee had voted against it. Dr. Channing Frothingham, Suffolk, called upon the Council to reverse the action of the Executive Committee.

Dr. Richard M. Smith, Suffolk, favored the motion. He thought from a business point of view it was a good thing to do. He stressed the point that he was speaking as an individual and not as a representative of the Committee on Publications. Dr. Frank R. Ober favored the motion, as did Dr. William B. Breed, Dr. Peirce H. Leavitt and Dr. Donald Munro.

Dr. Carl Bearse, Norfolk, said that this matter had been given very careful consideration by the Executive Committee and that he thought the Council should back up this committee's stand.

Dr. Fitz moved that the motion be tabled and referred once more to the Executive Committee. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

The chair recognized Dr. James P. O'Hare, Suffolk. Dr. O'Hare read a letter from Mr. John M. Deely, district rationing officer, which is as follows:

> Owing to the problems that have arisen in the administration of the food-rationing program, we find need of a board of advisors as relating to special diets certified by physicians.
>
> We should deeply appreciate it if the Council of the Massachusetts Medical Society would appoint a committee to assist the state director of food rationing to furnish specific help in formulating a state-wide policy and to pass on doctor's certificates, and to serve as a review committee for unusual cases.

Dr. O'Hare said that many physicians have attempted to help their patients obtain more fuel oil and gasoline than is ordinarily allowed. The problem of food, he added, will be solved by a special federal committee that is now working on this subject. In the meantime the regional director needs help now to solve immediate and pressing problems. Dr. O'Hare moved that the President appoint a committee of three to assist, by advice, the regional rationing board in the problem relating to the special feeding of the sick. This motion was seconded by a councilor, and it was so ordered by vote of the Council.

Dr. Maurice Fremont-Smith, Suffolk, was recognized by the chair. He moved "that the President appoint a committee of whatever number he chooses to gather facts on this situation and make a recommendation to the Council." In offering this motion Dr. Fremont-Smith spoke as follows:

> Last year the by-laws of the Society were amended so that no foreign physicians coming to this country could get into the Society until after five years in this country. This is no time to go into any discussion. I think there are very good reasons for the Society having taken some action to protect its members against an influx of foreign physicians, many or some of whom were undesirable and many of whom did not know our methods of practice. On the other hand, there is a considerable body of men in the Society who believe that the Society has done itself no honor by putting this by-law on the book; in fact, we believe that the Society has opened itself to the criticism that it is looking after its own interests rather than those of the public welfare and that it is acting like a medical trust. I know this was not the intention of the Society. There are some arguments against this by-law — whether we should treat all men who come from Europe as one group. I think that that shows little confidence in our local selection boards and in our general election board. I shall not carry this any farther.

Dr. Fremont-Smith's motion was not seconded.

At this point Dr. Schadt introduced the newly elected officers amidst great applause. These officers responded briefly.

The President announced that on Tuesday morning, May 25, 1943, at 9:00 a.m., the scientific sessions of the one hundred and sixty-second annual meeting of the Massachusetts Medical Society would begin.

It was regularly moved and seconded that the Council adjourn. It was so ordered by vote of the Council at 12:00 m.

MICHAEL A. TIGHE, *Secretary*

APPENDIX NO. 1

ATTENDANCE

BARNSTABLE
W. D. Kinney

BERKSHIRE
I. S. F. Dodd
Solomon Schwager
P. J. Sullivan

BRISTOL NORTH
W. H. Allen
J. H. Brewster
R. M. Chambers
J. L. Murphy

BRISTOL SOUTH
G. W. Blood
R. B. Butler
E. D. Gardner
C. C. Tripp
Henry Wardle

ESSEX NORTH
E. S. Bagnall
R. V. Baketel
H. R. Kurth
P. J. Look
R. C. Norris
G. L. Richardson
F. W. Snow

ESSEX SOUTH
H. A. Boyle
C. L. Curtis
R. E. Foss
Loring Grimes
P. P. Johnson

A. E. Parkhurst
O. S. Pettingill
W. G. Phippen
E. D. Reynolds
H. D. Stebbins
P. F. Tivnan
C. F. Twomey

FRANKLIN

A. W. Hayes
F. J. Barnard
H. L. Craft
W. J. Pelletier
H. G. Stetson

HAMPDEN

F. H. Allen
E. P. Bagg
W. C. Barnes
Eoline C. Dubois
Frederic Hagler
G. D. Henderson
F. S. Hopkins
E. A. Knowlton
A. G. Rice
G. L. Schadt
G. L. Steele

HAMPSHIRE

A. J. Bonneville

MIDDLESEX EAST

J. H. Blaisdell
R. M. Burgoyne
C. W. DeWolf
Richard Dutton
E. M. Halligan
R. W. Layton
M. J. Quinn
R. R. Stratton

MIDDLESEX NORTH

H. R. Coburn
R. L. Drapeau
A. R. Gardner
W. F. Ryan
W. H. Sherman
M. A. Tighe

MIDDLESEX SOUTH

C. F. Atwood
E. W. Barron
W. B. Bartlett
Harris Bass
J. M. Baty
W. O. Blanchard
G. F. H. Bowers
Madelaine R. Brown
R. W. Buck
E. J. Butler
J. F. Casey
B. F. Conley
H. F. Day
C. L. Derick
J. G. Downing
C. W. Finnerty
H. Q. Gallupe
Stanton Garfield
F. W. Gay
H. G. Giddings
H. W. Godfrey
A. D. Guthrie
Eliot Hubbard, Jr.
L. H. Jack
A. M. Jackson
F. R. Jouett
E. E. Kattwinkel
A. A. Levi
F. P. Lowry
A. N. Makechnie
J. C. Merriam
Dudley Merrill
C. E. Mongan
G. M. Morrison
J. P. Nelligan
E. J. O'Brien
Dwight O'Hara
S. H. Remick
Max Ritvo
M. J. Schlesinger
E. W. Small
H. W. Thayer
A. B. Toppan
J. E. Vance
Fresenius Van Nüys
R. H. Wells
B. S. Wood

NORFOLK

Carl Bearse
William Dameshek
Albert Ehrenfried
J. C. V. Fisher
Susannah Friedman
David Glunts
J. B. Hall
R. J. Heffernan
I. R. Jankelson
C. J. Kickham
C. J. E. Kickham
D. S. Luce
C. M. Lydon
T. F. P. Lyons
H. L. McCarthy
R. T. Monroe
F. J. Moran
Hyman Morrison
S. A. Robins
S. M. Saltz
D. D. Scannell
Kathleyne S. Snow
J. W. Spellman
W. J. Walton
N. A. Welch

NORFOLK SOUTH

C. S. Adams
D. L. Belding
D. B. Reardon
H. A. Robinson
W. L. Sargent

PLYMOUTH

G. A. Buckley
P. B. Kelly
P. H. Leavitt
C. D. McCann
J. J. McNamara
G. A. Moore
D. W. Pope
W. H. Pulsifer

SUFFOLK

H. L. Albright
A. W. Allen
W. B. Breed
W. E. Browne
E. M. Chapman
David Cheever
N. W. Faxon
G. B. Fenwick
Reginald Fitz
Maurice Fremont-Smith
Channing Frothingham
Joseph Garland
John Homans
L. M. Hurxthal
C. S. Keefer
H. A. Kelly
R. I. Lee
C. C. Lund
Donald Munro
H. F. Newton
R. N. Nye
F. R. Ober
F. W. O'Brien
J. P. O'Hare
L. E. Parkins
Helen S. Pittman
W. H. Robey
H. F. Root
R. M. Smith
M. C. Sosman
J. J. Todd
S. N. Vose
Conrad Wesselhoeft
C. F. Wilinsky

WORCESTER

C. R. Abbott
Gordon Berry
L. R. Bragg
P. H. Cook
L. M. Felton
E. L. Hunt
E. R. Leib
L. P. Leland
W. F. Lynch
J. C. McCann
A. E. O'Connell
R. S. Perkins
R. J. Ward
R. P. Watkins

WORCESTER NORTH

E. A. Adams
H. C. Arey
C. B. Gay
G. P. Keaveny
A. P. Lachance
F. A. Reynolds
J. G. Simmons
B. P. Sweeney

APPENDIX NO. 2

STATEMENT OF DR. HAROLD R. KURTH

I wish to draw your attention to a matter which presented itself to the local membership committee of the Essex North District Medical Society. This matter arose in the course of the examination of one of its applicants for membership in the Massachusetts Medical Society just previous to the last censors' meeting. Having presented the facts in this case, I should like to call on the members of the Council for a sense-of-the-meeting vote.

An applicant, who is a graduate of the University of Kansas City Medical School in 1932, licensed to practice medicine in Massachusetts in 1937, applied, on July 17, 1942, for admission to the Massachusetts Medical Society. His application was sponsored by a reputable member of the profession in his community, and forwarded to the district secretary, together with six letters of recommendation from colleagues of high professional standing in this district. The Essex North local membership committee met, examined and interrogated the applicant very closely and, as a result of that examination and close interrogation, was of the unanimous opinion that he should be recommended for fellowship in the Society. I might state here and now that the local membership committee of Essex

North takes its work very seriously and investigates all applicants, particularly those of unapproved or foreign schools. Unless they meet its unqualified approval the committee does not hesitate to refuse their applications for membership in the Society. This has been amply demonstrated in the past by the number of applicants who have been refused fellowship in the Society.

The chairman of the central committee on membership was duly notified by the secretary that "it is the unanimous opinion of this committee, after due investigation, and close interrogation, that the applicant be recommended for fellowship in the Society." The local membership committee was somewhat surprised when it received word that the central committee on membership did not approve the application, in spite of the fact that it had been unanimously endorsed by the local committee. The reasons given by the chairman of the central committee were that his "educational qualifications were rather dubious." The local committee maintains that it already fully realized that situation, but felt, nevertheless, that it was in a better position to pass judgment on the man's qualifications for membership than was a group of men who in all probability did not know him at all. Furthermore, the local committee felt that his "educational qualifications" would be no different in two years than they were at the present time!

The second reason given by the central committee was "that the local committee was not particularly enthusiastic" and that "his recommending letters were not particularly informative." The local committee, in answer to this criticism, states that it feels that it is not necessary for the local committee to eulogize its applicants, and that when the local committee unanimously approves an applicant for fellowship in the Society, it means exactly that, and nothing else. The recommending letters of the applicant were honest expressions of opinions of physicians of high standing in his district, and due emphasis should be placed on these letters of recommendation.

The third criticism as stated by the chairman of the central committee was that it was of the "greatest importance" that the district membership committee should show "that the district society wants that applicant as a member." To this criticism the local committee replies that the Massachusetts Medical Society is representative of the highest standard of medical practice and medical ethics, and is the organization with which all physicians aspire to become identified. Therefore the applicant seeks the Society, and not the Society the applicant!

The purpose in presenting this matter to you is that it was felt by the Essex North local committee that it had spent a great deal of time in investigating this man's qualifications; it had spent almost an hour in interviewing this man and, as a result, had unanimously approved his application. Yet in spite of all this work, and in spite of the fact that this man was endorsed by a group of men for whom the local membership committee has the highest regard, his application was rejected by the central committee for the reasons which have been discussed above. It is felt by the local committee that if the opinion of the local committees in general is to be upset by the central committee for such inadequate and unsubstantial reasons, that the function of the local committees will become purely superfluous in character. When Dr. John Monks, of the Suffolk District, introduced the change in the by-laws with reference to application for fellowship in the Massachusetts Medical Society, at the special meeting held on April 9, 1941, he stated, in speaking of the local committee, as follows:

> The Committee on Medical Education and Medical Diplomas has sensed for a long time how helpless it was in obtaining adequate information on which to determine the desirability of candidates for fellowship; this point has already been discussed more fully in the formal report. It is believed that a local board will be in every way better fitted to obtain this information than the central committee. The number of men on the board is small, they are already in positions of responsibility in their local society, and two of the three are already members of the board of censors, which eventually will examine those candidates finally approved. Further, it is very definitely felt that in the case of graduates of unrecognized schools the essential responsibility of whether or not they should be admitted to membership in the local society should lie with their own nearby colleagues, not with those farther afield.

He furthermore stated, "The central committee shall take the responsibility of seeing that on the one hand undue pressure has not been brought to bear on the local board to recommend for approval an undesirable applicant, nor, on the other hand, that unwarranted local prejudice bar from approval a desirable applicant." It does seem, then, that the responsibility for recommending or turning down applicants for fellowship should rest with the local committee, under the supervision of the central committee. I might state furthermore, that this was the opinion in the minds of Dr. J. H. Blaisdell's by-laws committee in reviewing the mechanism for application for fellowship in the Society. It is the feeling of the local membership committee of Essex North that the principles, as expressed by Dr. Monks's and Dr. Blaisdell's committees, have been disregarded in this case, and that should this policy be continued, the important work of local committees will be jeopardized and must eventually become purely superfluous.

We have brought this matter to the attention of the Council because we are firmly convinced that the present by-laws for application for membership to the Massachusetts Medical Society are adequate and desirable. An applicant is tried, and approved by his colleagues, who are in an excellent position to know the type of professional ethics which this applicant practices far better than a group of men who in all probability know nothing of the applicant at all! It is hoped that the principles expressed by Dr. Monks will continue to dominate the endorsement of all new applicants to the Society.

APPENDIX NO. 3

REPORT OF THE EXECUTIVE COMMITTEE TO THE ANNUAL MEETING OF THE COUNCIL

MAY 24, 1943

The Executive Committee of the Council has just finished the second year of its existence. During most of this time our country has been at war. When the enemy struck at Pearl Harbor, the committee had just about completed its organization. The echoes of this attack had scarcely died when in your name it pledged the skills and treasures of the Massachusetts Medical Society and, if necessary, the lives of its members to the President of the United States in what lay ahead. Pursuant to that pledge, our organization has been called on to make, almost overnight, many most important decisions. Fortuitous then was the circumstance which provided the machinery whereby this was made possible. The committee would have me say to you how greatly it appreciates this privilege of speaking in your name.

The Executive Committee on May 14, 1943, held a five-hour session.

It retired, on the recommendation of the Committee on Membership, the following fellows as of January 1, 1943, under the provisions of Chapter I, Section 5, of the by-laws:

E. Stanley Abbot, Wayland
Alice H. Bassett, Boston
William G. Brooks, Boston
Charles C. Carroll, Belmont
Frederick W. Colburn, Hyde Park
Frank E. Draper, Framingham
Joseph L. Goodale, Ipswich
James J. Goodwin, Clinton
Merton L. Griswold, Uxbridge
Byam Hollings, Boston
William F. Patterson, Medford
Warren D. Ruston, Rockport
Charles J. Smyser, New Wilmington, Pa.
Frederick W. Stuart, Dorchester
Edwin P. Tripp, Falmouth
Ralph R. Young, Jamaica Plain

It allowed the following fellows to resign as of January 1, 1943, under the provisions of Chapter I, Section 7, of the by-laws:

Francis M. Amaral, Point Loma, California
Joseph E. Canby, Hartford, Connecticut
Frances Cottington, New York City
Mitchell Gratwick, Tarrytown, New York
S. Harvard Kaufman, Pittsburgh, Pennsylvania
Nels A. Nelson, Baltimore, Maryland
Purcell G. Schube, Pasadena, California
Joseph C. Stammers, New York City
Mary Frances Vastine, Philadelphia, Pennsylvania
William D. Wheeler, Brookline
Lester R. Whitaker, Augusta, Georgia
John C. Whitehorn, Baltimore, Maryland

It allowed the following named fellows to change their membership from one district to another without change of legal residence under the provisions of Chapter III, Section 3, of the by-laws:

Louis K. Diamond, Brookline (Norfolk to Suffolk)
Franc D. Ingraham, Brookline (Norfolk to Suffolk)
Joseph F. Ross, Brookline (Norfolk to Suffolk)

It readmitted the following named fellows who had resigned while in good standing under the provisions of Chapter I, Section 10, of the by-laws:

Attilio Canzanelli, Boston
Arthur H. Crosbie, Boston
Henry L. Hirsch, Springfield
Elie J. La Liberte, Springfield

It readmitted the following named fellows, who had been deprived of membership for the nonpayment of dues, provided all their obligations to the Society are discharged within one month:

A. Walter Ciani, Boston
Patrick H. Walsh, Fall River

It remitted the dues, including those of 1943, of the following named fellows who are ill and incapacitated, under the provisions of Chapter I, Section 6, of the by-laws:

Franklin E. Campbell, West Medford
Harry H. Flagg, Charlestown
Edwards W. Herman, Lincoln
Florence H. Knowlton, Placentia, California
Bernard L. Plouffe, Webster
Joseph A. Ruel, Haverhill
Alpha R. Sawyer, Chestnut Hill
R. M. Shukle, Boston
William J. Sweeney, Wakefield
Ruth Weissman, Jamaica Plain

It deprived of fellowship, for the nonpayment of dues, the following named fellows under the provisions of Chapter I, Section 8, of the by-laws:

Gertrude W. Baldwin, Boston
Chester P. Brown, Swampscott
J. Lawrence Campbell, Denver, Colorado
Italia M. D'Argenis, Worcester
Howard T. Fiedler, Philadelphia, Pennsylvania
Grace E. Gillis, North Haven, Connecticut
Max Ginsberg, Salem
Ruth K. Jens, Brooklyn, New York
John J. Kerrigan, Fall River
Morris A. Silberg, Roxbury
Joseph A. Smith, Athol
Elizabeth A. Sullivan, Cambridge
Frederick C. Warnshuis, Windsor, Ontario
Richard S. Woodruff, Pittsfield

The committee, in conference with the Committee on Membership, under a directive of the Council given on February 3, 1943, reviewed the matter which had to do with the remission of dues of those members who had entered the United States Army, Navy or Public Health Service and offers the following recommendation:

> Fellows of the Massachusetts Medical Society shall not be required to pay further dues during their period of active service in the U. S. Army, Navy or Public Health Service. Those so requesting may receive the *New England Journal of Medicine* upon request and payment of a $4.00 subscription fee.
>
> The above does not apply to fellows going into active military service during the first year of fellowship in the Society.

The committee reviewed the report of the Committee on Membership in regard to the matter of establishing a junior membership in the Massachusetts Medical Society

and approves the report and its conclusions. This report will be offered by the Committee on Membership later in this meeting.

The Council referred, on February 3, 1943, to the Executive Committee four recommendations offered by the Auditing Committee of 1943:

> That the investment of the Society's funds should be under the direction of a professional investment company.
>
> That the report of the accountant should be more complete and include a list of investment transactions.
>
> That the latter should include a statement that the report of the fiscal year is reconciled with the report of the preceding year.
>
> That the duties of the Auditing Committee be turned over to a businessman trained as a bank examiner.

The officers of the Society, in connection with the first recommendation, engaged in certain preliminary conversations with Mr. R. H. Loomis, of the investment-counsel firm of Loomis–Sayles and Company, 140 Federal Street, Boston. The investment portfolio of the Massachusetts Medical Society was analyzed by Mr. Loomis, and a summary of this analysis is now presented.

Dr. Michael A. Tighe, Secretary
The Massachusetts Medical Society
8 Fenway
Boston, Massachusetts

Dear Dr. Tighe:

It was a pleasure to meet with you and your associates last month and go over the financial problems of the Massachusetts Medical Society. Since that time I have been given the opportunity of going over the present portfolio of the Society with the idea of noting possibilities of improvement of execution or any step that could be considered for better performance. I am advised that you are considering the employment of investment counsel for help in this matter. In going over the report I have had in mind what effect the employment of such counsel might have on the portfolio.

It would appear that Dr. Butler's administration was a very conservative one and succeeded in the main in maintaining dollar value. It is probable that during the particular period in which he operated this was, in the main, a proper objective, and personally I believe he did an exceedingly good job in a difficult period. To be sure he paid for it somewhat in increased work and in a very much reduced income. Nevertheless, his main objective was accomplished.

Without including the three or four purchases made a few weeks ago in the total tabulation, the account totals approximately $228,000. There are eighty-one separate items averaging less than $3000 each. It is easy to see how this was brought about when one considers the specific method used. However, I would say that there should be no need of so many items, particularly if one is going to deal exclusively in AAA securities. The accompanying table gives an analysis of the securities in the portfolio by type of security:

	Principal	Percentage of Principal	Income	Percentage Yield
Cash:				
Savings banks.....	$6,380	3.0	$118	1.85
Other	20,464	9.0	–	–
Note (Boston Medical Library)	19,000	8.5	570	3.00
U. S. Government bonds:				
Short term	14,566	6.5	366	2.52
Medium term.....	12,458	5.5	265	2.13
Long term	3,015	1.5	75	2.49
Short-term bonds....	36,244	15.5	997	2.75
Medium-term bonds..	31,943	14.0	1,352	4.24
Long-term bonds.....	46,317	20.0	1,671	3.61
Preferred stocks.....	3,450	1.5	143	4.15
Annuity policy.....	9,167	4.0	183	2.00
Demand loan	25,000	11.0	–	–
	$228,004	100.0	$5,740	2.52

You will note that the yield is 2.52 per cent. If you subtract the demand loan of $25,000, which draws no income, the yield on the fund then would be only 2.82 per cent. This is an exceedingly low, in fact an unnecessarily low, rate of return. I would like to point out that if you should consider following these methods of investment it would be more sensible for you to invest the entire fund in three or four issues of Government bonds, which would average nearly as good a return as you are now getting. If you had only three or four Government issues they would require practically no attention and probably a much smaller safe deposit box. There would be scarcely any bookkeeping and practically no cutting of coupons. By raising the yield of the total fund to 4 per cent, which certainly is not an unduly high rate, you could very considerably increase the income return to the Society, and at the same time pay an investment-counsel fee. In other words, I can see an opportunity in this particular fund of, first, lessening the amount of work that your treasurer would have to do by cutting down the number of necessary issues and, secondly, of so increasing the yield on the fund as a whole as to provide greater income to the Society and at the same time pay an investment-counsel fee.

In advising you to seek a higher rate of return I do not want to convey the idea that I believe in subjecting the portfolio to undue risk. I believe that the fund as a whole should be conservatively managed and that, by all means, maintenance of principal should be your most important objective. In these days when inflationary factors are so rampant, I believe that your board should give consideration to the question as to whether or not you wish to any degree to try to protect your funds from a declining dollar value. In other words, it would appear that it might be highly desirable for you to attempt to maintain the purchasing power of the income of the fund. Thus far, in the operation of the fund this has not been attempted in the least, and perhaps it has been just as well that this policy has been maintained up to this time. On the other hand, it would appear that the element of inflation is strong enough to provide a proper basis for attempting in some small way at least to protect the funds against the ravages of inflation and a declining dollar.

From the above table you will note that 42½ per

cent of the total fund is in cash or short-term funds. For maintenance of principal this may have been a proper proportion, but it has been paid for by an extremely low rate of return. It is questionable if the nature of your financial problems is such as to require such a large proportion of your funds in such near-cash securities.

I am not going to itemize the entire eighty-one issues because of the fact that they are so homogeneous in quality. They are all, with the exception of not more than half a dozen issues, of a very high grade as can easily be seen from a consideration of their prices and also from their yield. It is noticeable also in the list that there are a good many very high-grade municipal bonds. These municipal bonds carry a tax-free feature which is highly desirable to an individual having a high income and, therefore, a high tax bracket. In view of the fact that your society, however, is not operated for profit you are not subjected to taxes in any case and, therefore, in purchasing municipal bonds you are buying something that you really do not need. Nevertheless, you have to pay for it for the reason that such bonds are increased in price by the peculiar demand on the part of certain individuals. As indicated, you have no such demand and, therefore, I would point out that such securities are really not suited to your purposes.

In operating this account it would be desirable to know what the nature of your budget expenditures are. It would be helpful to know what you consider essential as a checking balance for such expenditures.

Now in regard to our services that might be rendered to the Society. We would assign a competent consultant who would have charge of this account in the office and who would constantly be in touch with Dr. Hubbard in regard to any possible sales, purchases or shifts in the account. The consultant would have available the entire work of our research department, consisting of approximately forty-five people. The consultant would take the initiative in getting in touch with Dr. Hubbard although, of course, Dr. Hubbard would have available at all times the opportunity of consulting directly with the consultant himself. Our research department has groups that are dealing with industrial securities, utilities, railroads, bank and insurance stocks and municipals, and also it has men who are following the course of money rates, governmental expenditures, and the course of industrial and agricultural prices. In recommending purchases and sales the consultant always gives reasons for the suggested action. It would be important for us to deal with one man, and I understand that Dr. Hubbard has the necessary power to proceed. I speak of this particularly because I do not believe that we could be of as much assistance if it were essential to deal with a committee. We have had considerable experience along this line and we have always found that the results are clearly better if we can obtain action easily and quickly, and this can usually only be done in dealing with one person. I mention this because upon it depends a great deal the success of any possible assistance we might give you. I am enclosing two copies of our usual contract. The fees which you will note on the bottom of the contract are as follows: annual fee, a rate of 0.5 per cent on the first $300,000, with 0.4 per cent on additional capital.

Other questions concerning our services may occur to you. I shall be very glad indeed to answer any questions which may come up. In the case of the Massachusetts Medical Society, I feel certain that through the years the fund would be greatly benefited from the application of professional investment counsel. We would be very glad to serve you.

Thanking you for this opportunity, I am

Sincerely yours,
R. H. Loomis

The committee recommends the employment of investment counsel. In offering this recommendation I am directed by the committee to make clear that it does not intend to commit the Society to just one type of investment counsel. The type supplied by banks should likewise be looked into.

The committee in connection with the second recommendation took notice of Chapter IV, Section 4, of the by-laws, which reads as follows:

> The Council shall elect at the stated meeting in October, on nomination by the President or from the floor, the Auditing Committee, composed of two fellows who are not councilors.
>
> This committee following the close of the fiscal year, shall require by a certified public accountant an examination of the assets and securities of the Society in the custody of the Treasurer, and of the Treasurer's books and accounts.
>
> This committee shall verify the accountant's examination and report its findings at the stated meeting of the Council in February.

It is the opinion of the committee that, by this section, auditing committees are provided with full authority to insist on the matter set forth in this recommendation. It is furthermore the opinion of the committee that auditing committees should so insist.

In the debate which attended this subject, it was brought out by Dr. Eliot Hubbard, Jr., treasurer *pro tempore*, that usually the books of the Society could not be closed before January 20. Dr. Francis C. Hall, chairman of the Auditing Committee of 1943, emphasized the fact that this being so the time intervening between this date and the February meeting of the Council was too short to enable an auditing committee to do the right kind of job.

The committee with this in mind, under the heading of new business, will offer such amendments to the by-laws as will provide that the Treasurer's and Auditing Committee's reports shall be offered to the Council at the annual meeting instead of the February meeting.

It was the judgment of the committee that the last two recommendations were covered by the action taken in regard to the first two.

The Council on February 3, 1943, referred to the Executive Committee a recommendation offered by the Committee to Aid the Boston Medical Library. This recommendation would have the Massachusetts Medical Society turn over to the Boston Medical Library the earnings of the Society's Building Fund. Under this directive the committee was ordered "to give this matter the attention and study which it deserves and that its report be given at least twenty days before the annual meeting if it is possible to do so." The committee has complied with this order and its recommendations accompanied the call of this meeting. They are as follows:

That the Massachusetts Medical Society acquire the space now occupied by the *Journal of Bone and Joint Surgery*.

That the Massachusetts Medical Society pay to the Boston Medical Library as rent a sum of money, up to $6500 per annum, for its quarters thus enlarged.

The committee in arriving at its conclusions in this matter took notice that the history of this organization contains many references as to the desirability of a permanent home. It noted that in 1928 a drive for funds for this purpose was conducted and that a sum of $18,000 was realized. It noted also that in 1929 a joint drive for funds was conducted by the Boston Medical Library and the Massachusetts Medical Society and that the sum of $180,000 was raised, one sixth of which, or $30,000, was allocated to the Massachusetts Medical Society as its share.

In 1931 the Massachusetts Medical Society loaned, from this fund, to the Boston Medical Library $24,703.29 from which it received 4½ per cent yearly up through 1939. The principal on this loan has been reduced, so that today it stands at $19,000. In 1940 the interest rate was reduced to 3 per cent.

The Society's Building Fund as it stands as of December 31, 1942, is $63,991.80 — the sum of these original amounts raised plus their earnings over the years.

The committee, in its investigations, noted a vote which was passed by the Council in June, 1929, which reads as follows:

ARTICLE I. All moneys or other funds received by the Society for the purpose of obtaining and maintaining a building for headquarters for the Society shall be kept by the Treasurer in a separate fund known as the "Building Fund."

ARTICLE II. Any interest obtained from the investment of said funds may be used as a whole or in part to pay rental for quarters to be used by the Society for central activities.

ARTICLE III. Any interest obtained from the investment of said funds and not used to pay rental as specified in Article II shall be added to the principal of the "Building Fund."

ARTICLE IV. The principal of said funds may be expended only to acquire real property to which the Society shall hold title.

The committee is of the opinion that this vote, while it continues to stand, precludes the possibility of using the earnings of the building fund as a gift.

In arriving at its recommendations in this matter, the committee calls to the attention of the Council the availability, without extra charge, of John Ware Hall, Sprague Hall, the Prince Room and the Supper Room for the activities of the Society, and the ever-increasing use which is being made of these facilities. It points out how important it is that the offices of the *Journal* be contiguous to the library itself. It finds some disposition to regard the present headquarters as a permanent home provided additional office space is made available for the use of the Society in its attempt to better serve its membership. Such are some of the conclusions which have influenced the committee in presenting these recommendations.

In connection with these recommendations, may I read a letter from Dr. William C. Quinby, which came too late to be considered by the Executive Committee but which is presented at the direction of the President.

To the Council of the Massachusetts Medical Society:

The Boston Medical Library through its Board of Trustees has directed me as treasurer to bring to your attention the matter of the facilities which the Library furnishes the Massachusetts Medical Society and the present need for a readjustment of the terms of the agreement now existing between them.

The desire of the Society for more space having been noted, the Library, to this end, has available the space now used by the *Journal of Bone and Joint Surgery*, consisting of a sizable room on the front of the building and a smaller office across the hall. With the addition of these rooms the Society will have at its disposal all the space to the right of the entrance hall on the first floor of the Library building.

In addition to space under permanent occupancy by the Society it is important to point out that the facilities of Ware Hall, Sprague Hall, the Prince Room and the Supper Room, will be, as in the past, at the command of the Society for those of its meetings as need such accommodation. Also, one half the space in the Library's fireproof vault is reserved for the use of the Society.

For these facilities the Library will charge the Massachusetts Medical Society the sum of $6500 (sixty-five hundred dollars) as annual rental.

A suggested form of agreement is appended.

WM. C. QUINBY, *Treasurer*
Boston Medical Library

The committee reviewed and approved the report of the Committee on Medical Defense and that of the Committee on Expert Testimony and approved both.

The committee commends the report of the Committee on Public Relations to the attention of the Council.

The Council, on February 3, 1943, referred the matter of supplying the armed forces with the *Journal* to a joint conference between the committee and the editors of the *Journal*. Dr. Nye reported that the Army had already approved of a plan to subscribe to the *Journal*, placing a copy in every Army hospital of twenty-five beds or over. He further reported that this will amount to between 450 and 500 subscriptions. He added that the Navy could use 100 copies. The cost to the Society of the latter would be about $400. A motion to send 100 copies to the Navy free was defeated.

The Executive Committee, on February 3, 1943, was directed by the Council to consider some method of attendance that would cause councilors to remain until the business of the Council is completed. The committee in this connection recommends that the stated meetings of the Council, other than the annual meeting, convene at 10:00 a.m. and, while there is any business to transact, do not adjourn for lunch until 2:00 p.m.

The committee acknowledges the receipt of a communication from Dr. Charles F. Wilinsky et al. of the staff of the Beth Israel Hospital. With the communication is included a protocol governing a plan for the care of the practices of such members of its staff as have or will enter the armed forces. The communication seeks the approval of the Massachusetts Medical Society. The committee recommends that this matter be referred to the War Participation Committee and that this committee report on this matter at the next meeting of the Executive Committee.

The committee, taking notice of the growing importance of anesthesia and the wisdom of encouraging in every way possible those who are engaged in its development, recommends that the Committee on Arrangements be instructed to provide for an exhibit and a luncheon meeting on anesthesia and for the suitable advertising of this exhibit and meeting in the annual meetings of the Society.

The committee received a letter from the National Conference on Medical Service, including a resolution which this body proposes to have offered in the House of Delegates of the American Medical Association at its meeting next month.

Investigation has shown that this conference springs largely from the Middle West. It could seem to be a bit dissatisfied with the scope of the activities of the Bureau of Medical Economics of the American Medical Association. It would substitute for this bureau a committee on medical service to be made up of the president of the American Medical Association *ex-officio*, the immediate past-president of the American Medical Association, the secretary of the American Medical Association, *ex-officio*, a member of the Board of Trustees of the American Medical Association, designated and selected by the Board of Trustees, and one member of the American Medical Association elected as hereinafter provided from each of the following nine geographical subdivisions of the United States:

New England	Middle Atlantic	East North Central
Maine	New York	Ohio
New Hampshire	Pennsylvania	Indiana
Vermont	New Jersey	Illinois
Massachusetts		Michigan
Rhode Island		Wisconsin
Connecticut		

South Atlantic	East South Central	West South Central
Delaware	Kentucky	Arkansas
Maryland	Tennessee	Louisiana
District of Columbia	Alabama	Oklahoma
Virginia	Mississippi	Texas
West Virginia		Panama Canal Zone
North Carolina		
South Carolina		
Georgia		
Florida		
Puerto Rico		

West North Central	Mountain	Pacific
Minnesota	Montana	Washington
Iowa	Idaho	Oregon
Missouri	Wyoming	California
North Dakota	Colorado	Alaska
South Dakota	New Mexico	Hawaii
Nebraska	Arizona	Philippines and Pacific Islands
Kansas	Utah	
	Nevada	

The resolution provides:

The members of the House of Delegates from each of the foregoing geographical subdivisions of the United States shall elect one member of the American Medical Association to serve on said committee; three of said nine members shall serve for one year, three shall serve for two years, and three shall serve for three years; the respective terms of office of the nine members first elected shall be decided by lot and thereafter the said terms shall be for three years each; the expiration date for the first one-year term shall be at the next ensuing annual session of the House of Delegates of the American Medical Association; expiration dates for all terms shall coincide with the dates of the regular annual session of the House of Delegates of the American Medical Association.

The resolution defines the duties of such a committee under seven headings:

(1) The making available of scientific facts and data and medical opinion with respect to timely and adequate rendition of medical care to the American people.

(2) To integrate the activities of the Committee on Medical Service with respective state and county committees on like activities.

(3) Establish relationships and co-operation with other allied groups who are likewise engaged in the rendition of medical care, in its various branches, to the American people.

(4) The Committee on Medical Service shall hold at least two meetings per year; one shall be held at the time and place of the annual meeting of the House of Delegates; the other meeting shall be held in the City of Washington, D. C., and called at the direction of the chairman; and such other meetings as may be necessary to be called by the chairman upon the written request of the majority of the committee.

(5) The committee shall forthwith and annually thereafter elect from its own membership a chairman and a vice-chairman.

(6) The Committee on Medical Service shall establish and maintain an office in Washington, D. C., and shall further be empowered and directed to employ a full-time executive director, who shall act as secretary of the committee, and, whose duties shall be specified by the committee. Such executive director shall be a physician who has been actively engaged in the private practice of medicine for not less than five years during the previous ten years, and furthermore, be informed and qualified to act as a liaison representative of said committee.

(7) The Committee on Medical Service is further authorized to hire such legal and administrative help as is necessary.

The resolution adds that the work of this committee shall be supported by an appropriation from the American Medical Association of not less than fifty cents and not more than one dollar for every member.

The communication called on us to instruct our delegates to support the resolution. The Executive Committee reports that it has not sufficient knowledge of this matter to enable it to recommend that our delegates be instructed to either favor or oppose this resolution. The committee recommends that the resolution be referred to our delegates without prejudice.

A list of appointments for the year 1943-1944 submitted by Dr. Roger I. Lee, president-elect, was approved. This list will be read by Dr. Lee later in the evening.

Michael A. Tighe, *Secretary*

APPENDIX NO. 4

REPORT OF THE COMMITTEE ON MEMBERSHIP

The suggestion of the Massachusetts State Committee of the Procurement and Assignment Service, of which Dr. Reginald Fitz is chairman, is as follows:

> A curious finding has arisen which it seems to me deserves consideration. Approximately 1900 Massachusetts doctors have commissions or have had commissions with honorable discharge in one of the branches of the armed forces. Of these 1900, only 1050 are members of the Massachusetts Medical Society. Of the 850 commissioned officers who are not members of the Society, 200 in round numbers are substandard school graduates and not necessarily desirable for the Society to worry about. That leaves a pool of about 650 young men who represent sort of a floating medical population.
>
> In this pool are interns, residents, fellows, junior teachers in medical schools who come here for two to three years and such people. Potentially, in normal times, they represent a valuable part of our medical population because practically all are engaged in full-time work or are active in research or teaching. I raise the question as to whether the Society and the Boston Medical Library might not make some effort to attract men of this type.
>
> Could we not offer some sort of a junior or temporary membership to both organizations at a reduced fee, and would it not be worth while for these organizations to stir themselves up in order to make their work as appealing as possible to men of this type? What is your thought on the matter?

The Committee on Membership initially, on consideration of the above, was very much in favor of the creation of a new form of membership which might be called a "junior membership," rather than a "temporary membership" or an "associate membership," because we already have in the Massachusetts Medical Society a classification known as "associate fellowship," an honorary grouping; but the committee believed the Society should know what need of such membership existed, to what extent such membership would be utilized in the Commonwealth and exactly what privileges and duties would accompany such membership. It was thought that junior membership must be, at least for the time being, confined to physicians who have graduated from approved schools only. From oral contact with some of the trustees of the Boston Medical Library, it developed that a junior membership in both the Massachusetts Medical Society and the Boston Medical Library, at a reduced fee as suggested by Dr. Fitz, was not feasible or workable. Accordingly, the committee has attempted to clarify the establishment of junior membership in the Massachusetts Medical Society alone and not in combination with any other organization.

There can be little doubt that there is a pool of young physicians, largely interns and residents in hospitals, these physicians not being members of the Society. Your committee has attempted to contact such physicians in the major Boston hospitals and some of the outlying metropolitan hospitals. We have found in our conversations with these groups of men that there was not an excitable interest to join the Massachusetts Medical Society at this time. The *Journal* is available to nearly all these men. The internship at present allowed by the Government is of one year duration only. The majority of men are financially embarrassed. They feel their future is so uncertain that they have expressed little or no interest in junior membership in the Massachusetts Medical Society, irrespective of privileges granted or duties involved. Hence, the need or the utilization of such new form of membership by this particular intern group of physicians seems to the committee to be exceedingly small.

In order to clarify the rights, prerogatives and duties of such membership, if established, Dr. Fitz and the chairman of the committee have communicated with Dr. Olin West, secretary of the American Medical Association, relative particularly to two points, namely, Would junior membership in the Massachusetts Medical Society, applied to young physicians of not more than five years out of medical school and graduates of approved schools carry with it automatically membership in the American Medical Association? Would the American Medical Association grant its journal or one of its publications to such members at any reduced rate under the regular subscription fee of $8.00 per year?

Dr. West has informed us in writing that there are intern members in the Chicago Medical Society, who have the right to attend meetings only, and that other component societies have established junior memberships for the benefit of young men who have completed intern service and have been licensed to practice but find it difficult to pay regular membership dues. There have also been established a few associate memberships in some state societies, but the number of component societies who have established such classification are few. To quote from Dr. West:

> My information is to the effect that not any intern members or junior members or associate members of the kind referred to above are entitled to vote or to hold office and that the names of the members of those special groups are not reported to the secretary of the constituent state medical associations immediately concerned for enrollment as members of the state associations. Associate members of constituent state medical associations *are not* supposed to be reported to this office for enrollment as members of the American Medical Association unless they have all the privileges accorded to active members under the constitution and by-laws of the individual constituent state medical associations immediately concerned.

Dr. West further states that it is improbable that the journal or one of the other American Medical Association publications could be furnished to any physicians at less than the set cost of $8.00 per year.

It is therefore clear that junior membership would not carry automatically membership in the American Medical Association.

The committee further believes that it would be impossible to establish a junior membership on any financial basis less than that commensurate with the cost of the *Journal*. It seems obvious that such membership would not allow the holding of office but would carry with it attendance and participation in the meetings of the Society.

Bearing in mind the results of its investigations, as briefly outlined above, the Committee on Membership favors in principle the establishment of a junior membership for physician graduates five years or less of approved medical schools, but does not think that this

is the time for the establishment of such new class of membership because of unsettled war conditions.

HARLAN F. NEWTON, *Chairman*

APPENDIX NO. 5

REPORT OF THE MASSACHUSETTS STATE COMMITTEE OF THE PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS

The Massachusetts Medical Society may well feel proud of the record already made by young Massachusetts doctors in the present war.

Captain Edward Mozes, of Malden, was in the fighting at Guadalcanal. He was a battalion medical officer, responsible for collecting the wounded of his unit, caring for them as best he could, and for evacuating them. The country was hilly, in ridges, dipping in and out of steep and treacherous ravines, so that all medical equipment and supplies had to be carried by hand. The enemy was within easy range, pestering our men with machine-gun fire, mortars, artillery and sniping. Captain Mozes organized his detachment effectively under these circumstances, he performed a leg amputation and gave plasma to a number of patients in the field, he developed a small advanced hospital for the immediate treatment of those who developed malaria, and whenever his battalion moved he always was in column with his men, ready to handle any emergencies that might arise. Clearly, he set an unusually fine example of intelligent and fearless work in very trying conditions.

Lieut. John T. Roach, of Jamaica Plain, was a medical officer on the *Lexington* in the Coral Sea. With utter disregard for his own personal safety he treated the wounded on his ship and directed the removal of casualties from a dark and smoke-filled compartment frequently shaken by violent explosions. His outstanding conduct, his cool courage and his professional skill undoubtedly saved the lives of a great many men who must inevitably have perished without his assistance.

In French Morocco, Lieut. Charles P. Roberts, of Boston, another naval medical officer, administered plasma to a severely wounded soldier under direct shell fire and bombing. As in the case of Lieut. Roach, he too appeared entirely unconscious of his own safety as he carried on his work.

One reads, with great respect, such reports of the gallantry which our young men are displaying; because although these isolated episodes happen to have been described in the newspapers, they are typical of what our medical officers are doing quietly and inconspicuously wherever there is need.

Hearing that there were a number of wounded men lying in front of his Aid Post, this officer went forward under heavy shell fire and, regardless of his own personal safety, attended to them. By his action and bravery the lives of many men were saved.

This was said in 1918 of one of the present members of the Council. It gives a feeling of pride to know that our young medical men of today are chips of the old block and that they are upholding the traditions of medical service which have been passed on to them by their seniors.

Editorials have appeared in the *Journal of the American Medical Association* and the *New England Journal of Medicine* recently, commenting on the urgent and immediate needs for more officers from this part of the country. Whether one agrees or disagrees with the computations involved is beside the point. The fact remains that the Army and Navy are asking for more medical officers.

The 1942 *American Medical Directory* credits Massachusetts with 8085 doctors. Of these, the Society claims as members 5351. Thus there are two distinct pools of medical men in the State — those who belong to the Massachusetts Medical Society and those who do not.

The latter group comprises 2734 physicians. In this pool are young men who are graduates of medical schools approved by the Surgeons General but who have not applied for admission to the Society, a number of graduates of substandard schools who are ineligible for membership in the Society under our present by-laws but have obtained commissions, a residue of older physicians for whom the armed forces have no need, and a group of younger men who are licensed to practice medicine in Massachusetts but are not commissionable for a variety of reasons. This particular source of medical officers is now nearly used up. It appears to have yielded 1269 officers and cannot be expected to supply many more.

Officers to be commissioned in future, therefore, must be derived almost entirely from the ranks of our own membership except in the case of the very young men who are commissioned as medical students. These men, as they complete their internships, will enter the armed forces automatically.

The War Manpower Commission talks in terms of ages, grouping doctors under thirty-eight years old in one class, those between thirty-eight and forty-five in another, those between forty-six and sixty-four in a third, and those over sixty-five in a fourth. In a war such as the present, doctors who are most youthful make the most desirable officers. A sampling of the age of 1900 medical officers drawn from Massachusetts shows that 67 per cent were under thirty-eight years old, 22 per cent between thirty-eight and forty-five, and 11 per cent were between forty-six and sixty-four. Another way of saying this is that in the medical corps of the Army and Navy the youngster in his early thirties is encountered six times as frequently as is the venerable old man of fifty, and three times as often as is the middle-aged doctor in his forties. The chances are, too, that, on the whole, in warfare the medical man's usefulness is inversely proportional to his years.

We have in the Massachusetts Medical Society 1269 (24 per cent) doctors under thirty-eight years of age, 1128 (21 per cent) who are between thirty-eight and forty-five, 2032 (38 per cent) who are between forty-six and sixty-four, and 891 (17 per cent) who are more than sixty-five. The distribution of age groupings varies to a certain extent in the different districts, although the general trend is identical; universally among our members there are more older men than younger men.

A graph has been constructed which shows how the members of the Society in different age groups have been classified by your committee (Fig. 1). Nearly every member in the Society has now been labeled "available" or "essential," and in the case of the availables, as being in one of the services, as having been rejected as unfit

for military service by one of the surgeons general, or as still being potentially commissionable.

The forty-five-to-sixty-four group can be dismissed very promptly. Men in this age group who wish to volunteer are likely to do so, and it makes little difference to them who wishes to call them essential. On the other hand, except in occasional instances, their services are unlikely to be more useful in the Army and Navy than

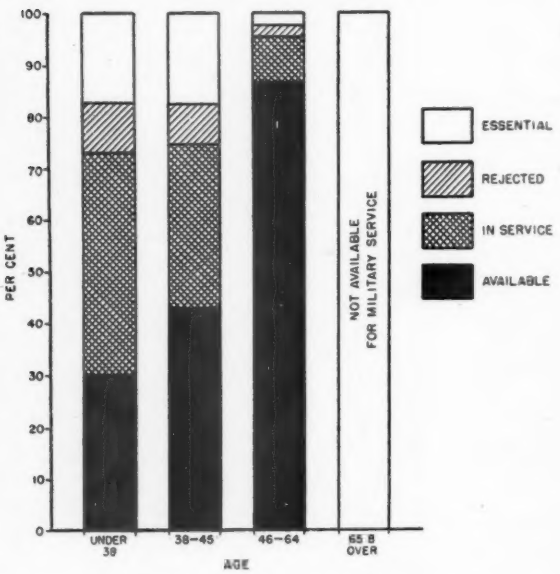

FIGURE 1. *Analysis of the Membership of the Massachusetts Medical Society.*

in civilian life, and neither branch of the service will put any pressure on men of this age to join.

Doctors in the age group between thirty-eight and forty-five are more problematical. To be sure, as already stated, they are likely to be less useful, by and large, than younger men, but on the other hand, they still can make very desirable officers. They are apt to find it a difficult matter to uproot themselves from civilian life for they are well established. Many are qualified specialists. One of the important pieces of work to be done will be to analyze each of the availables in the group in our membership with a view of determining how many and which ones should be encouraged to volunteer.

The youngest age group, those doctors under thirty-eight years old, are the ones most keenly sought by both Army and Navy. The majority of doctors from Massachusetts who enter the Army or Navy during the next few months should come from it, and it is here that are encountered many perplexing problems. Here are men who have been called essential and, whether justifiably or not, may require investigation. Here, in any city or town, is the residue of available men who appear to become increasingly essential as time goes on, whereas had they obtained commissions earlier nobody would have noticed their absence. Here are encountered patriotic young men who find themselves weighed down by a variety of economic or family problems and need advice regarding the proper thing to do.

Another graph has been constructed which reveals the uniformity with which the different districts have supplied medical officers (Fig. 2). It is apparent that our members have gone into the Army and Navy from the

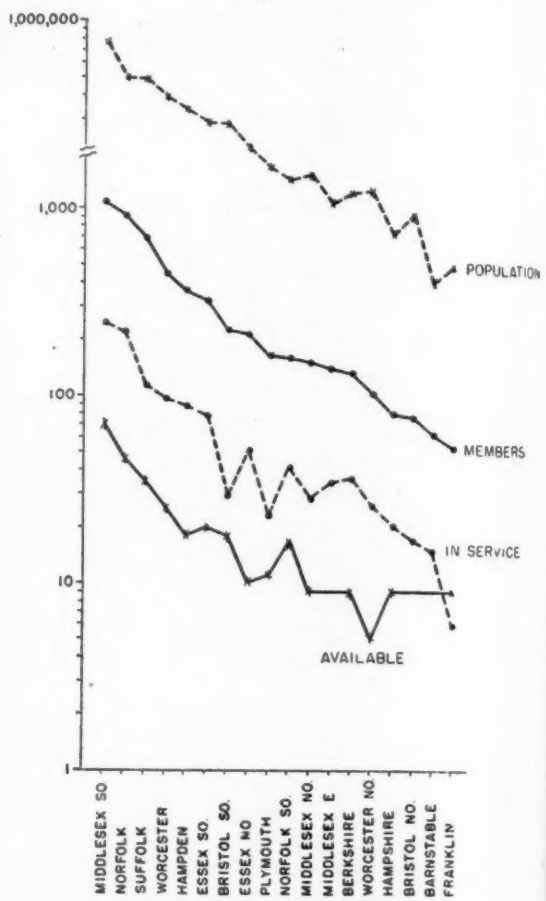

FIGURE 2. *Graph to Show the Manner in Which the Different District Societies Have Supplied Medical Officers. The ratio between population, membership and officers supplied is relatively uniform.*

different districts in about equal proportions and that so far local Procurement and Assignment committees have used nice discrimination in avoiding any serious medical depletion. The problem that remains is to determine how many of those left in each district should be pressed into national service. Obviously, the largest numbers must come from the largest district societies.

On the ratio of doctors to population we still have more doctors than we need. Although a number of our young men have left the State, the health of the people does not show evidence of having been injured thereby. Nor does the additional load of work thrown on the older physicians who have stayed behind appear to have been harmful. During 1940, 1941 and 1942, the Society lost each year by death about a hundred members, and during the last twelve months only seventy-five. Thus Massachusetts seemingly can spare more doctors.

Since the last meeting of the Council a plan to accelerate enrollments has been proposed by the War Manpower Commission. Stated briefly, the plan, as it might be adopted here, is as follows.

Henceforward, a physician who is declared available to apply for a commission and does not do so will receive written notification from the Massachusetts Medical Society in these words:

> Dear Doctor .....:
>
> You have received notification from the Procurement and Assignment Service for Physicians of the War Manpower Commission that you have been declared available and inviting you to apply for a commission. You are requested to appear at ..... on ..... when your case will be reviewed by a committee of the ..... District Medical Society.

Each district medical society will be asked through the President of the Massachusetts Medical Society to establish a reviewing committee. This committee will be composed of older men of unquestioned impartiality and character. One of them will serve as presiding officer of the committee, and another will act as secretary and recorder. The president of the district medical society, the president of the Massachusetts Medical Society and the chairmen of the local Procurement and Assignment committees will be members of such reviewing committees *ex-officiis*.

Such committees will attempt to interview all available men in each district as the names are submitted, explaining the need of the armed forces for medical officers and a physician's obligation to volunteer. If a doctor does not wish to volunteer, for any reason, the committee will hear his arguments. If the committee believes that a man classified as available should not enter the armed forces, it shall say so, or on the other hand, if it believes that a man should volunteer, it shall so inform him. The recorder of each committee will keep the chairman of the War Participation Committee of the Society informed of its decisions, and the latter committee will in turn report to the Massachusetts State Committee of the Procurement and Assignment Service for Physicians. Final opinion as to a man's availability will continue to rest in the Corps Area Committee.

If a man declared available does not apply for a commission within ten days after his case has been considered in this fashion, he will be reported to the state director of Selective Service, with a request for his reclassification.

This plan, which amounts to establishing a mechanism for the direct solicitation of medical officers by the Massachusetts Medical Society through each of its district medical societies, offers the threat of possible depletion of medical manpower from overzealous recruiting. Your committee believes, however, that the plan can be made to operate safely and effectively.

Your committee, therefore, begs leave to conclude this report with the following resolution:

> WHEREAS, The War Manpower Commission has announced that there is immediate need for more physicians to serve as medical officers in the armed forces of the United States; and
>
> WHEREAS, The War Manpower Commission has announced that Massachusetts should supply more medical officers than have so far been commissioned from the State; and
>
> WHEREAS, A plan has been suggested by the War Manpower Commission through which the enrollment of medical officers may be accelerated with the help of county or district medical societies in certain states; therefore, be it
>
> RESOLVED, That the Massachusetts Medical Society support this plan; and be it further
>
> RESOLVED, That reviewing committees be established by each district society, the members of which shall be nominated by the district-society presidents and appointed by the president of the Massachusetts Medical Society. Such committees shall serve for the general purposes outlined in this report.

REGINALD FITZ, *Chairman*

APPENDIX NO. 6

REPORT OF THE COMMITTEE CONCERNED WITH PREPAYMENT MEDICAL-CARE COSTS INSURANCE

Carrying out the understanding that I should bring periodic reports of progress, I present an interim report utilizing the time given to the Committee Concerned with Prepayment Medical-Care Costs Insurance.

I shall first discuss the present status of Massachusetts Medical Service. There is, of course, the question, which is always pertinent, as to the desirability of the present time for starting such a program. There is a difference of opinion on this matter. The State Department of Insurance believes that this is a favorable time, but other groups maintain that, owing to the change in the economic status of the working family, this is not a desirable time. However, an attempt to present the program effectively to the public has been started in recent months. In January there were a few samplings in the Boston area. It is only since the last week in February that an effort to sell the whole state was undertaken. Since a few months are needed to begin the work of interesting groups before a sales campaign can become effective, it really means we are just starting underway to procure subscribers.

There are different factors which bear and will bear on the growth of this organization, and I just want to outline them as quickly as I can under four headings. If you carry these headings in your mind, it will give you a better grasp of our problems. The first relates to the whole organizational activity; the second relates to the type of contract; the third relates to sales problems; and the fourth relates to income limitations established by the Society.

Regarding organizational activities, there is a matter which is known to the voting members relating to the $25,000 which the Council so generously voted and made available to the corporation. The Commissioner of Insurance ruled that only $5000 of that shall be available to start the corporation, and that $20,000 shall be held by a bank in trust, to be used only with his approval in a letter bearing his signature and when we have a surplus of $225,000. So that you can see we are really starting in under a very definite handicap, and I feel that the Council should know that $20,000 of the $25,000 is retained in the bank earning interest. Then there is the requirement that out of first-year premiums, a 25 per cent reserve shall be set aside. This is not available either for meeting the expenses of the corporation or for paying the physicians. In the face of these facts it is very evident that we can work only to a certain point at which premiums must begin to grow adequately to carry us along.

Regarding another angle bearing on that point, we have been working in close co-operation on a contract basis with the Blue Cross. Much of the $5000, as you must realize, has been used up in the initial printing and miscellaneous expenses incidental to starting the program. Outside of that, there has been the contribution of a tremendous personal effort by the members of the Blue Cross organization. That effort has been given most generously, but it is very evident that there is a point beyond which we cannot pass, so far as that personal contribution is concerned. The question has not yet been raised, but certainly it is common sense that our premiums must begin to accumulate to that point where they will meet the percentage requirement that will be due the Blue Cross group for sales effort and organizational activities. Certainly that is not in sight yet.

The problem of sales is definitely related to the fact that the salesmen of the Blue Cross organization have only a limited amount of time that they can give to the Blue Shield program. In order to augment the growth of the Blue Shield a quota has been established for the salesmen. For the Blue Cross their monthly quota shall be 500 subscribers; and 100 for the Blue Shield. With this quota basis it is hoped there will be increased effectiveness in selling the Blue Shield program.

Among the organization activities there is the question of reaching the profession. We have at the present time 4500 men in the state in active practice, and it is a difficult problem to get all information to them so that they can effectively understand it and make up their minds whether they are going along with the program. The chief approach in the past, as you know, has been personal — last year through speeches to the county societies, and then through the distribution of information to the members of the Society in the form of statements in the *Journal*; there has also been some degree of publicity in the papers. At present it is difficult to carry on much publicity because of the fact that there is not a great deal of sales achievement to which publicity can be related. Also, with reference to the profession is the very pertinent problem of the nonacceptance of the corporation by some doctors, which is related to several very evident facts. First, there are groups of physicians who have not become persuaded that the prepayment plan offered by the Medical Society is a necessary program. Then there is a group which questions the type of contract, feeling that the basis of surgical and obstetric coverage is not broad enough. Third is the nonacceptance of the fee schedule by a definite proportion of the men. Then there is the fact that some of the men who are nonparticipating physicians hinder the sales of contracts to prospective groups by reason of their own nonparticipation.

The second factor is the type of contract. I shall not go into it extensively, but it requires brief reconsideration. There are, of course, only three definite approaches possible on the present basis of experience. One is the complete medical-care contract, another the complete hospital coverage, and the third is surgical-obstetric coverage in the hospital. As you look across the country you see that there has not been a successful move by a state medical society to offer a complete-coverage contract. Oregon is the only one at present which is active in this respect, but on a county basis. Others have moved away from it even to the extent of giving up their program of complete service coverage and adopting surgical-obstetric programs on a cash-indemnity basis. There has been some renewal of interest in California and Buffalo in complete coverage simply because of the fact that the Government is participating with the medical groups in starting such service to cover war industries and housing projects. The complete hospital coverage so far is being undertaken only by New Jersey; it was tried and given up in Buffalo. The number of policies of this character sold do not indicate yet any increase in interest as compared with a surgical-obstetric contract. Concerning the latter, with which we have started, it is unfortunate that, since in other states 69 per cent of payments are to general practitioners, it has been misinterpreted through the state as a specialists' program.

Regarding the third factor, the sales program, there is one big item of importance which enters into the problem so far as the support of the profession is concerned, and that is that experience across the country shows that in order to avoid financial difficulties with the program a very definite percentage requirement is needed to enroll any single group. This ranges from 50 to 75 per cent. We are attempting to liberalize some of these requirements. But it is well to keep in mind that lacking care we can repeat the experience of a large state on the western coast, where the program has cost them already $100,000; and in Michigan the deficit was, until recently, over $500,000. They have gradually reduced this to $365,000. Nonparticipation by physicians may limit the appeal of the program so that it will be difficult to meet percentage requirements.

With regard to the fourth factor, the problem of the limitation of incomes, that relates particularly to the change in status of the workmen in the state. We established the income limitation for the service benefits, that is, no extra charge by the physician, at $2000 for the individual and $2500 for the family. A recent report on this state shows a marked increase in the average earnings in certain districts, so that the question of whether we can procure a cross-section enrollment is before us. The average income today in the state is $41, which makes an income of $2050 for the year. When we check that against the percentage requirement for enrollment of certain groups, it is questionable whether the percentage can be procured. In certain sections it would seem too many workers would be out of the picture. That is so with the $49 weekly earnings average which now applies to Beverly; and in Worcester, the average income is $47 per week. As I evaluate the service offered and the problem of enrollment percentages, those in the low-income group may not enroll; the high-income group does not seem to be keenly interested in cash indemnity without protection; and the middle-income group, the group earning from $2000 to $2500, is not now a large enough group to meet the percentage requirements for enrollment.

The question will arise, if the present situation continues, whether the Society should consider doing something with reference to the income levels. There are only three possible approaches other than maintaining them at their present levels or increasing them slightly, say to $3000 for the large family. One is that there be no ceiling, as in Oregon and Buffalo. The other is to have a second higher premium structure and fee schedule for upper-income groups. That is like Dr. Elliott's plan in New York, which has not yet been very effective. The third is that the Society might consider the question of adding to the present service base an arrangement for a fixed additional charge — a ceiling charge over and above

the fee schedule applicable to the $4000 or $5000 groups, beyond which they would agree not to go. Finally, a reconsideration of a ward contract discussed in committees but not presented to the Council will be called for in the future.

I simply call these facts to your attention for future consideration. They may present serious questions depending on what happens to the program in the light of experience in the next few months. As a basis for recommendation I should first simply suggest that this present setup be given a thorough trial, as far as the sales effort is concerned, for several months, and that we keep close watch to determine whether or not it is beginning to carry itself on the basis of contracts sold and premiums earned. Then if any change is desired it should be definitely related to a careful study of experiences elsewhere and an evaluation of the validity of those experiences as they are related to our state program. If possible we must seek to procure more definite cooperation and understanding by the profession through continued approach to them so that all may understand how vital it is for us to achieve success with this program.

JAMES C. MCCANN, *Chairman*

APPENDIX NO. 7

REPORT OF THE COMMITTEE ON CANCER

Your interim chairman of the Committee on Cancer is deeply sensible of the honor which appointment to the position so long and so ably filled by Dr. Shields Warren has conferred upon him. Having held this office but a few weeks, his report can hardly be as comprehensive as could be desired; nevertheless he wishes to report the work of the committee to date. It was not possible to file the report for prepublication because of the shortness of the interval between appointment and the time the report was requested by the Secretary.

A meeting of the committee was held at the Hotel Sheraton, Boston, on May 7. Drs. Simmons, Truesdale, Daland and Hunt were present.

A hearing was given to Mr. H. D. Fish, assistant managing director of the American Society for the Control of Cancer, Incorporated, who presented a plan for lay organizations in the large centers of population to extend the work of popular education in co-operation with the state program and backed by the experience and facilities of the Society. After free discussion, the committee decided that it was inexpedient to launch the suggested plan at this time.

Dr. Herbert L. Lombard, director of the Division of Adult Hygiene, Massachusetts Department of Public Health, was present by invitation and submitted the following statement in regard to the educational program of the department:

> The exigencies of war have seriously interfered with the cancer education program in this state. This is particularly true concerning the activities of the co-operative cancer-control committees. The absence of many physicians, the scarcity of gasoline, and the inherent dangers of the blackout have resulted in a greatly diminished number of cancer meetings. The realization that the situation might become more acute, combined with the need for a continuation of some type of cancer education during the period of war, prompted a two-day symposium to discuss means and methods of carrying on the educational campaign. The participants in the symposium included Professor Edwin B. Wilson, Dr. Shields Warren, Dr. Ernest M. Daland, Dr. Ira T. Nathanson, Dr. Clifford C. Franseen, Dr. Ernest L. Hunt, Mr. Ernest Stephens, Mr. Richard J. Schmoyer, Mr. Winthrop L. Webb, Mr. George L. True, Mr. W. O. Johnson, Mr. Arthur D. Thomson, Mrs. Florence Parker, Mrs. Dorothy Averhill, Miss Margaret Allen, Mrs. Hilda LaRocca, Miss Mary M. Hurley and other members of the staff of the Division of Adult Hygiene, Department of Public Health.
>
> As a result of the symposium a booklet, *Cancer: The what, whither, how*, has been prepared which can be used either by the co-operative cancer-control committees or by schools desirous of helping in cancer education. A monthly bulletin, *Cancer Tidings*, is being sent to the central committees, both to maintain their interest and to further cancer education. In so far as possible the regular talks of the co-operative cancer-control committees have been given but there has been a distinct decrease in their number.
>
> The cancer situation in Massachusetts, however, improved in 1942. The interval between first symptoms recognized by the patients and consultation with the first physician was the lowest it has ever been. The adjusted death rate for females again dropped and has now returned to the level of 1913.
>
> It is very gratifying to record the continued interest of so many people in the cancer program in spite of their many other activities.

Dr. Channing Simmons reported on state-aided cancer clinics, particularly in relation to the changes and progress growing out of the survey which he conducted last year, the details of which were reported to the Society through the *Journal* (September 17, 1942) and formed part of the report of this committee at the October meeting of the Council. In that report he criticized seven clinics and made certain suggestions, which have been carried out, so far as possible, by the Department of Public Health. The Quincy Clinic has been discontinued. The Newburyport Clinic is essentially combined with that of Beverly, at least for the duration of the war. The Hyannis Clinic is unsatisfactory. The attendance has fallen off lamentably since the shortage of gasoline. One surgeon strives to keep it going because it is geographically important and affords a limited opportunity for carrying on educational work. The Pittsfield Clinic was discontinued by vote of the local medical society. This is unfortunate considering the geographical situation of the city. Transportation to Westfield is good, however. Reorganization of the Brockton Clinic by the Plymouth County Cancer Committee has taken place, and it is now conducted on lines very closely approximating the standards defined by the Department of Public Health. It is the belief of clinic chief, Dr. G. A. Moore, that changes effected will make for more efficient service to an increasing number of patients. Concerning the Greenfield and Springfield clinics details on which to base an estimate of progress from the situations considered unsatisfactory in the 1942 survey have only today come to hand and show definite gains since the date of the survey.

All the clinics suffer from losses to the armed services of staff personnel but are carrying on as best they can. Many older men have taken over the work of their

younger colleagues, and volunteer nursing and clerical aides have helped in those phases of the clinic service.

In spite of the handicaps imposed by wartime conditions it is believed that there must be no letup in the cancer-control effort. It is the opinion of your committee that a greater awareness of his opportunity on the part of every individual physician practicing in the State could do much to offset the loss of trained workers in the clinics. Such awareness should be acquired by the physician by drilling himself in the habit of requiring the completion of a diagnosis in all cases that present any symptom or sign which may by any possibility be due to cancer. Definitive diagnosis without undue delay is the desideratum. Nothing less can square with the doctor's sense of duty to his patient.

Fortunately such are the standards of most doctors. The progressively shortening intervals between the time of seeking advice and the receiving of definitive treatment as revealed by the experiences of the state clinics shows that physicians are more and more generally living up to the demands of the situation and are, moreover, taking active part in spreading the gospel of early diagnosis through personal contact with their families and by talks to lay groups which now abound in every community.

As the medium through which the benefits of modern medical science shall become available to the individual citizen it is our conviction that there is no substitute for the well-educated, experienced, conscientious doctor.

ERNEST L. HUNT, *Chairman*

APPENDIX NO. 8

REPORT OF THE MILITARY POSTGRADUATE COMMITTEE

The Military Postgraduate Committee held its first meeting on November 6, 1942, when plans were made to provide postgraduate extension courses for the Army and Navy medical officers who are stationed within the Commonwealth. Colonel J. J. Reddy, chief of medical operations of the First Service Command, and Captain H. L. Kelley, chief of medical operations of the First Naval District, had already welcomed the offer of the Society and advised the committee to proceed to arrange a curriculum and organize a teaching staff. At this meeting the committee conferred with officers representing the medical staffs of Fort Banks, the Chelsea Naval Hospital, Camp Edwards, Fort Devens, the Portsmouth Navy Yard and Westover Field. As a result, a curriculum was developed and a faculty organized. The plan of postgraduate instruction included clinics and ward rounds with the instructor acting as a consultant, supplemented by formal and informal lectures.

The committee is unanimous in reporting that this project has been well worth the effort and expense. Much has been learned in regard to the postgraduate needs of the medical officers of the armed forces, as well as about the methods of presenting the subject matter. Each session has been an ordered military formation, so that the attendance has been practically 100 per cent. Our civilian instructors have learned that punctuality and thorough mastery of the subject matter are necessary to meet the exacting demands of wartime medicine.

On May 20, 1943, the committee held a second joint meeting with representative medical officers from the various Army and Navy posts. The work of the past winter was reviewed; constructive criticism was received from each of the medical officers present. The committee's work has been greatly facilitated by comments and suggestions from these officers during the past season. Some of their comments will be of interest to the Society.

Westover Field. Colonel Schwichtenberg and Lieutenant Staples report that clinical case teaching and informal ward rounds at the Station Hospital before the lectures have helped greatly in holding interest and making the teaching more practical. They consider the course highly successful and heartily thank the Society for providing this postgraduate program.

Camp Edwards. Lieutenant Colonel John C. Eckels and Lieutenant Colonel Lewis W. Hill gave an enthusiastic account of the postgraduate courses at their camp. They find that the time spent in going to the postgraduate programs is very much worth while. They wish to inform the Society that a camp commanding officer may detail any medical officer for ten days' residence instruction without cost to the Government at any time; they hope that the committee will find it possible to provide for such residence postgraduate instruction during the coming year. They expressed the appreciation of all their medical officers for the work of the instructors.

Fort Banks. Major R. Earle Glendy gave a review of the postgraduate courses offered at their hospital; the interest has been above average, and they request a continuation of the courses on a year-round basis, if possible.

Portsmouth Naval Hospital. Commander Eugene H. Drake reported that they greatly appreciated the courtesy of the Society in sending an instructor to their hospital and hoped further progradiate instruction could be provided for the Navy.

Lieutenant Commander James M. Faulkner, of the Chelsea Naval Hospital, cited the large naval hospital at the Quonset Air Base in Rhode Island and asked if the Society could be persuaded to offer instruction there.

Fort Devens and the Chelsea Naval Hospital have been handled by members of local medical societies; since these programs had already been arranged, your committee had nothing to do with them officially, although several of our instructors attended the meetings. The officers at these posts report that they will probably use the Society's teaching facilities another year.

The committee had a budget of $350; $235.07 has been spent for necessary expenses, leaving a balance of $114.93. Both the Army and Navy extend their thanks to these busy teacher physicians who donated their time.

The medical officers in charge of the postgraduate courses are as follows: Fort Banks, Major R. Earle Glendy; Chelsea Naval Hospital, Lieutenant Commander James M. Faulkner; Fort Devens, Colonel Gilbert T. Hyatt; Camp Edwards, Colonel C. W. Riley, Lieutenant Colonel John C. Eckels and Lieutenant Colonel Lewis W. Hill; Portsmouth Navy Yard, Commander Eugene H. Drake; Westover Field, Colonel Albert H. Schwichtenberg and Lieutenant Charles Staples.

Twenty-seven instructors gave a total of thirty-three sessions as follows:

DATE	SUBJECT	INSTRUCTOR
	FORT BANKS	
Nov. 13	The Importance of an Unstable Blood Pressure in Applicants for Military Service	Dr. Robert W. Wilkins
Nov. 20	The Importance of Renal Glycosuria in Applicants for Military Service	Dr. Howard F. Root
Nov. 27	The Management of Peptic-Ulcer Patients	Dr. Franklin W. White
Dec. 11	Blood Plasma as a Therapeutic Agent	Dr. Charles A. Janeway
Jan. 8	The Early Recognition and Treatment of War Neuroses and the Common Psychoses	Dr. H. Houston Merritt
Jan. 22	The Acute Abdomen	Dr. Hollis L. Albright
Feb. 19	Chest Injuries	Dr. John W. Strieder
Mar. 5	Vitamins, with Special Reference to Surgical Patients	Dr. Harold Jeghers
Mar. 19	Surgery of the Neck	Dr. Herbert D. Adams
Apr. 2	Genitourinary Infections	Dr. Oscar F. Cox
Apr. 23	Chemotherapy	Dr. Howard Allen
	CAMP EDWARDS	
Nov. 23	Hypertension	Dr. Laurence B. Ellis
Dec. 17	Surgery of the Neck	Dr. Richard B. Cattell
Dec. 30	Atypical Pneumonias	Dr. Maxwell Finland
Jan. 14	Emergency Abdominal Surgery	Dr. Samuel F. Marshall
Jan. 28	Back Pain and Foot Trouble	Dr. William A. Rogers
Feb. 11	Syphilis	Dr. Francis M. Thurmon
Feb. 25	Blood Diseases, with Particular Reference to Blood Infections	Dr. William Dameshek
Mar. 11	Shock	Dr. Stanley Bradley
Mar. 25	Peripheral Vascular Surgery	Dr. Reginald H. Smithwick
Apr. 8	Head and Spine Injuries	Dr. Donald Munro
	PORTSMOUTH NAVY YARD	
Dec. 17	Pneumonia	Dr. Maxwell Finland
	WESTOVER FIELD	
Dec. 3	The Acute Abdomen	Dr. Richard B. Cattell
Dec. 11	The Problem of Head Injuries and Their Treatment	Dr. Donald Munro
Dec. 30	Low Back Pain and Foot Trouble	Dr. Frank R. Ober
Jan. 13	The Nature and Treatment of Congestive Heart Failure	Dr. Samuel A. Levine
Jan. 27	Atypical Pneumonias	Dr. Chester S. Keefer
Feb. 10	Genitourinary Infections	Dr. Oscar F. Cox
Feb. 24	Burns	Dr. Donald W. MacCollum
Mar. 10	Internal Fixation of Fractures	Lieut. Clarke Staples
Mar. 24	Chest Injuries	Dr. Richard H. Overholt
Apr. 7	Blood Transfusions	Dr. William Dameshek
May 19	Treatment of Knee Injuries	Dr. Frank R. Ober

The committee recommends:

That the committee be continued and directed to enlarge its activities so far as practicable.

That an invitation be extended to the other New England state medical societies to co-operate in this project and that all medical officers of the Army and Navy in New England be offered postgraduate instruction in some form.

That the Massachusetts Medical Society underwrite the expense of this effort.

W. RICHARD OHLER, *Chairman*

CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

FOUNDED BY RICHARD C. CABOT

TRACY B. MALLORY, M.D., *Editor**
BENJAMIN CASTLEMAN, M.D., *Acting Editor*
EDITH E. PARRIS, *Assistant Editor*

CASE 29271

PRESENTATION OF CASE

A twenty-nine-year-old woman was admitted to the hospital because of back pain and an abdominal mass.

Seven and a half months before entry, one month after the birth of an only child, the patient, when wearing a girdle or when leaning against a solid object, noticed a throbbing sensation in the left lower quadrant, which was synchronous with the pulse. The pregnancy was her first, and was not remarkable except that during the last five days of the puerperium urinary retention was severe and required catheterization. The delivery was at term and was uneventful. Following delivery she suffered with extreme fatigability, her habitual constipation increased and nausea developed. Four months before entry, one week prior to catamenia, a severe aching pain developed in the mid-dorsal region that was intermittent during the day and constant during the night, often interfering with sleep. Before and during this catamenia, which was normal in amount and duration, she had severe abdominal cramps that made her double up. She had never had premenstrual or menstrual distress. Subsequent periods were entirely normal. At that time she felt a small firm nontender mass in the left lower quadrant. Three weeks before entry the mass increased in size and gradually rose higher in the left side of the abdomen. During the three weeks prior to admission the back pain became progressively worse and the patient was obliged to sleep in a sitting position. She gave up the use of proprietary laxatives because of the great exacerbation of pain that these produced. Her physician confirmed the presence of a mass in the left side of the abdomen. At the time of admission she was troubled by weakness and back pain. At no time had there been any menorrhagia, metrorrhagia, hematuria or pyuria. Despite continuous nausea she had vomited only once in eight months. She had never been jaundiced. The stools had never been tarry, bloody or acholic, nor was the urine dark. There was never any flank pain with radiation to the groin. During the illness she had lost 6 pounds.

The family and past histories were noncontributory. The menarche occurred at fourteen and a half years. The cycle was regular at twenty-six to thirty days, and catamenia lasted four or five days without distress, except as already noted. There was no leukorrhea, and she denied venereal disease.

Physical examination disclosed a well-developed and well-nourished woman. A few small lymph nodes were felt in the left posterior cervical triangle. The heart and lungs were normal. There was no abdominal rigidity or tenderness. A firm, tender mass was felt in the left hypochondrium extending upward somewhat under the costal margin, laterally into the left flank, and downward and medially to the umbilicus. It seemed round, firm and smooth. It moved with respirations and slightly with change in position but had no notch. Fingers could be placed on the superior aspect of the mass, especially when the patient was lying on the right side.

The blood pressure was 138 systolic, 100 diastolic. The temperature was 98°F., the pulse 82, and the respirations 20.

Examination of the blood revealed a red-cell count of 4,900,000, with a hemoglobin of 12.5 gm., and a white-cell count of 6700, with 73 per cent neutrophils, 15 per cent large lymphocytes, 9 per cent small lymphocytes, 2 per cent monocytes and 1 per cent eosinophils. A blood Hinton test was negative. The stools on three examinations were dark brown and guaiac negative.

A flat plate of the abdomen demonstrated a 7-cm., round, soft-tissue mass in the left midabdomen superimposed on the lower pole of the kidney. It showed central radiolucency. No unusual areas of calcification were seen, and an intravenous pyelogram was negative. The left ureter was incompletely filled in the region of the mass. During a barium enema, the barium passed through a normal rectum, colon and cecum. There was no connection between the bowel and the previously described mass.

An exploratory laparotomy was performed on the eighth hospital day.

DIFFERENTIAL DIAGNOSIS

DR. THOMAS E. ANGLEM: May we see the x-ray films?

DR. GEORGE W. HOLMES: There is only one obvious variation from the normal here, and that is the round mass which is described in the text. The colon was negative and in the lateral view the mass lies almost lateral to the vertebral

*On leave of absence.

bodies, well back in the abdomen. The center of the mass is said to be translucent. That may be so, but I should not put much weight on that statement. If one could be sure of that observation I think the tumor would contain fat and would possibly be a dermoid cyst. But the colon overlies it, and the area of decreased density may be gas in the bowel rather than anything in the tumor itself. It would be interesting to determine whether the tumor was attached to the kidney and whether it moved with respiration.

DR. ANGLEM: It did move with respiration. The matter of translucency bothered me a good bit.

DR. HOLMES: I should not disagree with that statement about radiolucency; however, I should not want to change my diagnosis on account of it.

DR. ANGLEM: The onset of this patient's difficulty one month after delivery of a baby raises the question of whether or not this pregnancy was related to her subsequent difficulty. The only tumor that I can relate to pregnancy is chorionepithelioma, and the usual features of this disease are entirely lacking. It is safe to assume that the pregnancy was coincidental and had no bearing on the later troubles.

We are confronted, then, with a story of a mass in the left upper quadrant that had produced nausea, gradually increasing fatigability, increase in the patient's habitual constipation and a severe dorsal back pain, which was worse when she assumed the dorsal decubitus position and was relieved when she assumed a sitting posture; there was also one episode of crampy abdominal pain associated with catamenia. On examination a firm, round mass was found in the left upper quadrant, which was slightly tender, moved on respiration and had slight lateral mobility. The commonest mass in this location is an enlarged spleen. The physical characteristics of this tumor as described are not those of an enlarged spleen, which usually retains its general contour. I should think the physical findings were consistent with a tumor or cyst of the spleen, but I find it difficult to explain the other symptoms on this basis, and this holds true of the other intraperitoneal tumors that may occur in this area, such as mesenteric and omental cysts and tumors. Moreover, with a negative barium enema we have no evidence that this tumor originated in the large bowel, nor have we any convincing proof that the tumor originated in the small intestine. There is, however, considerable evidence in favor of a retroperitoneal position for this mass. The posterior reference of the pain, the increase in the pain on the assumption of the dorsal decubitus position, and the relief on assuming a sitting posture suggest to me a retroperitoneal mass with stretching of the posterior peritoneum and stretching or irritation of the celiac plexus by the underlying tumor. The sitting position relaxes these structures. I believe the constant nausea may also be explained as a result of irritation or stretching of the celiac plexus.

The commonest solid retroperitoneal tumors that occur in this area are, first of all, those arising from retroperitoneal lymph nodes, namely, malignant lymphoma of any type. The mention of nodes in the posterior triangle of the left side of the neck suggests the possibility that this may have been a lymphomatous tumor with early generalization of the disease. However, lymph-node masses in the retroperitoneal area are almost invariably fixed and are not likely to show respiratory excursion or radiolucency. The other solid tumors that occur in this area are retroperitoneal lipoma and fibroma and a wide variety of less common tumors, such as those arising from the adrenal glands and rests and a large number of tumors of uncertain origin, some of which arise from fetal rests. Most of these tumors are fixed and unlikely to show respiratory excursions. Furthermore, they are unlikely to exhibit areas of radiolucency.

A wide variety of cystic tumors occur in this area, the commonest of which are the dermoid cysts. Unlike the solid tumors, the cystic ones are apt to show some degree of mobility, and it might be expected that such a cystic mass might show excursion on respiration. In addition to the dermoid cysts there are other cystic tumors, such as those arising from the mesentery of the large and the small bowel, the remains of the wolffian duct, and the lymphatic vessels. Rare cysts of enteric origin also occur, some of which are likely to be radiolucent in whole or in part. Cysts of the tail of the pancreas fulfill some of the requirements that we have to meet to explain this patient's symptoms. A cyst of the tail, unlike other cysts of the pancreas, may be relatively mobile and can show respiratory excursion, but again it is difficult to explain the radiolucency on this basis.

Lastly we have to consider tumors and cysts of the kidney. In spite of the fact that a pyelogram was negative and there was no evidence of intrinsic disturbance of the kidney, a tumor originating in the kidney capsule is entirely consistent with this picture. I refer to the mixed tumor of the kidney, which occasionally contains masses of fat and therefore might explain the central area of translucence. The absence of typical renal pain is a point against such an origin of this mass. However, it is possible for tumors of this type, particularly those originating in the kidney cap-

sule, to produce symptoms chiefly by pressure on and disturbance of contiguous structures without intrinsic disturbance of the kidney. The fact that the urine was not recorded interests me and suggests that something was found in the examination.

DR. TRACY B. MALLORY: It was entirely negative.

DR. ANGLEM: I believe that with tumors occurring in this area, particularly when the symptoms are as bizarre and unusual as those presented by this patient, it is almost impossible to make a precise diagnosis. All one can say with any degree of certainty is that the patient had a retroperitoneal tumor or cyst of unknown origin. I believe that the most likely diagnosis is mixed tumor of the kidney, with a central fatty area.

DR. MALLORY: Dr. Anglem has given an ingenious solution of this problem. I should like to show what the surgeon saw at operation and ask him to consider the matter further.

A large cystic mass was found in the mesentery of the small bowel, and over the adjoining loops of small bowel were little, bright-yellow, slightly chalky masses that grossly were characteristic of fat necrosis (Fig. 1). The opinion of the surgeon, as well as that of the consulting pathologist who was called to the operating room, was that it was a tumor in the mesentery, with thin chalky deposits characteristic of fat necrosis on the bowel and on the mesentery itself.

DR. ANGLEM: I am afraid that does not tell me very much except to suggest that the origin was in the tail of the pancreas. If this mass was actually in the mesentery of the small intestine, then I cannot assume that. I think the possible explanation is that this was one of those bizarre enteric cysts with mucous cystic structures, which might contain any sort of filling, possibly necrotic cells that were responsible for the fat necrosis.

DR. MALLORY: How can one tie up this tumor with fat necrosis, Dr. Allen?

DR. ARTHUR W. ALLEN: This was a patient from my service on whom Dr. Robert Linton operated. The first operation consisted in looking at the cyst and removing one of these little nodules for biopsy. Rather at my insistence he reoperated a little while later and was able to remove this mass without damaging too much of the blood supply to the bowel. The question was whether it involved the mesenteric vessels so intimately that it could not be safely removed. It may comfort Dr. Anglem to know that we did not have any idea what this was until after the sections following the removal of the cyst were made.

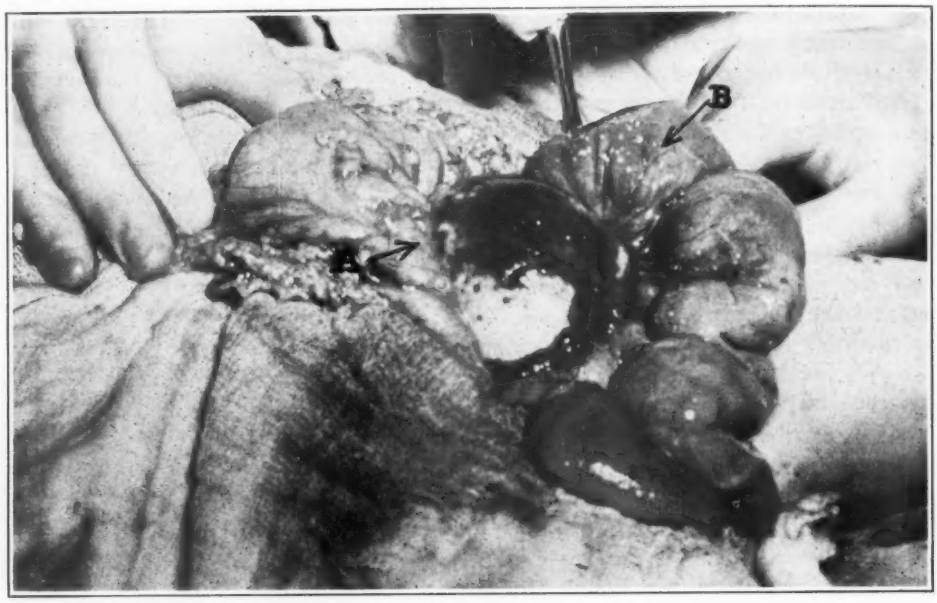

FIGURE 1. *Photograph of Loop of Small Intestine, Showing Cyst in Mesentery* (A) *and Chalk-like Granules on Serosa* (B).

CLINICAL DIAGNOSIS

Omental cyst.

DR. ANGLEM'S DIAGNOSIS

Retroperitoneal tumor or cyst (? mixed tumor of kidney).

ANATOMICAL DIAGNOSIS

Chylous cyst of mesentery of small intestine.

Pathological Discussion

Dr. Mallory: The answer to the problem is that the "fat necrosis" was not fat necrosis! All these little chalky spots consisted of dilated lymphatics filled with inspissated lipoid material; adiposis of all lymphatics was present. The cyst itself contained putty-like grayish material. I think perhaps the radiologist's report of radiolucency was correct. There was nothing to indicate clearly whether this was neoplastic or entirely mechanical from beginning to end. I think it is quite possible that this was simply mechanical plugging of the lacteal system of the small bowel, with subsequent inspissation of fat from the local lymphatics. On the other hand, another possibility is that this was a lymphangiomatous cyst, which, in turn, had caused the lymphatic obstruction. There was no characteristic lesion that we could make out.

Dr. Allen: But you thought it was probably a chylous cyst at the time?

Dr. Mallory: I still think so, but that does not prove whether or not it was of neoplastic origin.

Dr. Allen: A chylous cyst in the mesentery has been described. Was there any recognizable epithelial structure?

Dr. Mallory: None whatever.

CASE 29272

Presentation of Case

A thirty-seven-year-old man, a jewelry worker, entered the hospital complaining of chills, fever, abdominal pain and jaundice.

Eleven days before entry, after eating a heavy meal, he developed vague, abdominal discomfort. The following day he vomited, and two days later developed pain to the left of the umbilicus, which was relieved by an enema. During the next two days he had almost a constant urge to move his bowels but was able to pass only gas and a little fecal material. During the five days before entry he developed pain to the right of the umbilicus. The pain was cramplike, sharp, occurred at frequent intervals and did not radiate. Six days prior to entry he became jaundiced and his stools became clay colored. Two days later, however, the stools were yellow. During the four days prior to entry, the patient had chills and fever up to 103°F.

The family and past histories were noncontributory.

Physical examination showed a well-developed and well-nourished jaundiced man. There was dullness with absent breath sounds at both bases posteriorly. The abdomen was slightly distended, with moderate tenderness under the right costal margin and in the right lower quadrant. There was no spasm. Rectal examination showed large hemorrhoids.

The blood pressure was 140 systolic, 80 diastolic. The temperature was 103.5°F., the pulse 140, and the respirations 40.

Examination of the blood showed a hemoglobin of 12.4 gm. per 100 cc. and a white-cell count of 20,100, with 87 per cent neutrophils. The urine was dark amber in color and gave a ++ test for albumin and a ++ test for bile. The serum bilirubin was 4.1 mg. per 100 cc., direct and 5.5 mg., indirect. The prothrombin time was 34 seconds (normal, 22 seconds). The hematocrit was 46.8 per cent. A blood Hinton test was negative. The stools were brown but bile negative.

A portable film of the chest showed a slightly elevated diaphragm on both sides and some atelectasis in the right lower lung field. A film of the abdomen showed a moderate amount of gas in the colon and stomach, but no definitely dilated loops.

For the first three days the fever ranged between 101 and 102°F. and the jaundice remained about the same. The liver was felt below the costal margin, but the abdomen remained unchanged. On the fourth day the abdomen was softer and there was no tenderness or spasm. The patient had some diarrhea; the stools continued to be brown but bile negative, and the urine to contain bile. Diarrhea continued for three days, and a proctoscopic examination showed two or three thrombosed hemorrhoids at the anal margin. The mucous membrane of the rectum appeared normal. Beginning on the fifth day the patient began to have a spiking temperature, ranging from 98 to 104°F. each day. On the seventh day there were definite tenderness and resistance in the right upper quadrant, with a suggestion of a mass in this region. A serum bilirubin was 6 mg. per 100 cc., direct, and 9 mg., indirect. A blood culture showed no growth. A Widal test was negative.

He was given vitamin K, transfusions and intravenous 5 per cent glucose in saline, but continued to run a spiking temperature with chills; he died on the sixteenth hospital day.

Differential Diagnosis

Dr. Gordon Donaldson: In totaling up this patient's illness it is evident that he was sick for nearly a whole month before death. During the last twenty-two of these twenty-seven days he was jaundiced; and from the apparently acholic stools, the bile in the urine, the van den Bergh reactions and, finally, the appearance of a mass in the right upper quadrant, it is fair to say that he was suffer-

ing from an obstructive type of jaundice implicating the extrahepatic biliary system, rather than from a primarily portal type of cirrhosis. It seems unlikely that a diarrhea-producing toxin or chemical could have so completely and suddenly eliminated bile secretion. So we shall say that he did have an extrahepatic biliary block.

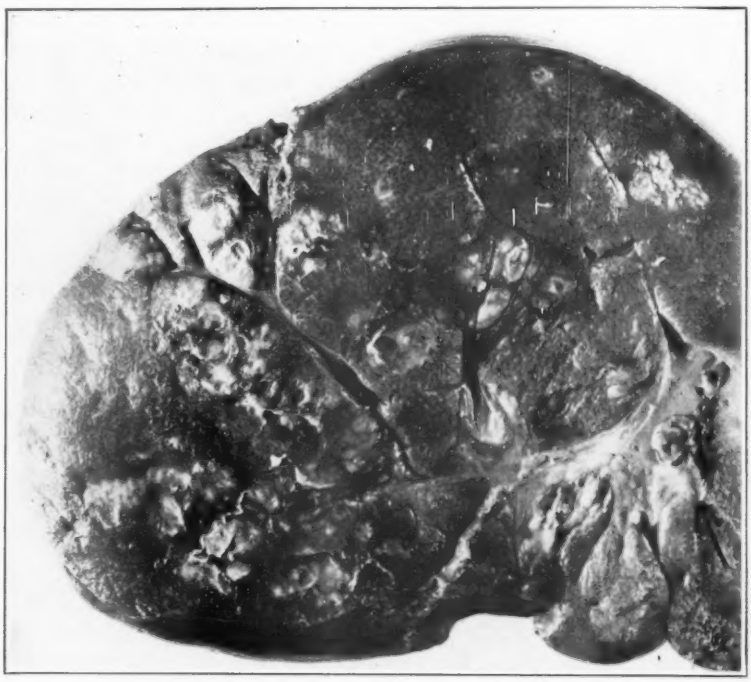

FIGURE 1. *Photograph of Liver, Showing Pylephlebitis and Multiple Abscesses.*
The arrow points to a thrombus in main portal vein.

There are, however, features in this story that direct attention to the remainder of the abdomen. The onset of pain was to the left of the umbilicus. Later it settled in the right abdomen, still at umbilical level. Moreover, the patient suffered recurrent diarrhea and occasional rectal tenesmus. Certainly the bowel itself was involved in this process. Typhoid fever can be ruled out by the white-cell count and the solitary negative Widal test. There are no stool cultures or examinations to lead us to implicate the other bacillary and amebic dysenteries. Any of these might have resulted in a primary dehydrating diarrhea and a later liver abscess, which obstructed the flow of bile and produced jaundice. Proctoscopy at such an early stage in the disease need not be positive, but in this case the negative findings probably help to rule out dysentery as a probable diagnosis. Ascaris infection, echinococcal disease and Weil's disease should be mentioned in passing as rare but unlikely possibilities. Likewise there is little to support the diagnosis of cancer of the bowel with metastases to the periportal lymph nodes or even to the liver itself. The onset of symptoms was much too fulminating and severe, and on entry the patient is described as a young man in a state of good nutrition.

Subacute gallstone ileus could fit the bowel picture well. The passage of a foreign body through the small bowel would stimulate diarrhea and allow for a shift of the pain about the umbilicus. Moreover, it is described as cramplike, sharp and occurring at regular intervals, which is perfectly consistent with an obstructive, peristaltic type of pain, with the obstruction finally lodging in the terminal ileum. The abdominal film is of no help as no stones were seen, and any small-bowel dilatation would have been minimal in this type of obstruction. A spot x-ray film centered over the gall bladder might have been of real value in revealing stones. Certainly the events in the right upper quadrant were perfectly consistent with common-duct obstruction, perhaps caused by a second gallstone.

It is a little distressing to find that, in spite of all his fever and leukocytosis, there was never any striking tenderness or spasm in the right upper quadrant, at least until shortly before death. However, a deep-seated, thickened, sclerosed gall

bladder might still be inflamed and give little surface indication of its status. It is not uncommon for such an acute or subacute gall bladder by its very juxtaposition to the colon to give diarrhea and even tenesmus. The degree of bowel symptoms as given in the case history is certainly extreme. As for the locus of pain, it has been said that the gall bladder can give pain anywhere in the abdomen oftener and more atypically than any other organ.

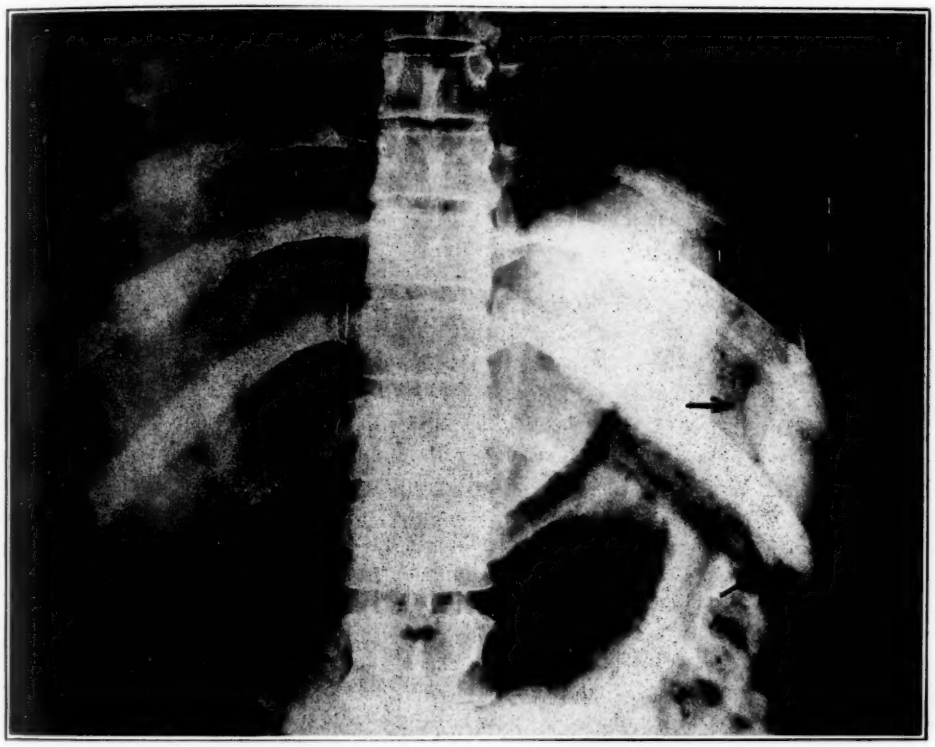

FIGURE 2. *Roentgenogram of the Upper Abdomen after the Injection of Thorotrast.*

Note the areas of decreased density (black) representing abscesses in the enlarged liver, which has elsewhere taken up the Thorotrast to produce increased density (white). The spleen (arrows), which has uniformly taken up the Thorotrast, is homogeneously dense.

The degree of cholangitis must have been marked, consistent with a complete mechanical biliary obstruction. The severe chills, spiking temperature and white-cell count of 20,100 are to be expected in inflammation of the bile ducts. The early abnormal prothrombin time is perhaps more prolonged than one would expect in such an acute process, but still entirely possible.

The initial episode of vague abdominal discomfort followed by vomiting probably marked the onset of inflammation in the gall bladder. Irritation of the colon followed. A stone, which may have been passed at that time or may have already been in the common duct, caused obstruction and jaundice. Acute cholecystitis itself may have caused common-duct obstruction, but one would not expect the process to have been complete. The resulting cholangitis persisted. Meanwhile other stones obstructed the bladder, aggravating the inflammatory process and leading to a palpable acute gall bladder or, more likely, to a palpable pericholecystic abscess. Probably at no time was the patient considered to be in good enough shape to allow surgical drainage, and he finally died of his infection and liver failure.

DR. DWIGHT L. SISCOE: When one knows all the facts it is difficult to discuss the case without bias. Dr. Donaldson has analyzed this patient's illness extremely well, especially the latter part of it. He would have achieved even greater accuracy if he had given more consideration to the onset of the illness, although the protocol perhaps does not emphasize some of the facts that stand out in my memory.

When I first saw the patient, three days after admission, I was impressed by the fact that he was a perfectly well, thirty-seven-year-old man, without antecedent history suggestive of disease,

who, a few hours after eating a large meal, developed nausea and vomiting followed in three or four hours by severe pain in the region of the splenic flexure, diarrhea and fever. This was associated with a constant urge to defecate and was relieved by an enema. Later,—we are told five days before entry, but it was actually twenty-four hours later,—he developed pain to the right of the umbilicus. This pain was constant and sharp, occurred at frequent intervals and did not radiate. Jaundice was not noted until six days after the onset. As Dr. Donaldson stated, these facts certainly implicate the intestines, and this is just the point that I think should be emphasized. It seemed to me that this was typical appendicitis, and we must not allow ourselves to be led astray by the fact that the original pain was on the left side of the abdomen. Diverticulitis and ulcerative colitis were considered and were the reason for proctoscopy.

Dr. Richard H. Sweet: When I saw this patient he was quite ill, febrile and jaundiced, with a palpable slightly tender liver. There was generalized distention of the abdomen, but no signs of peritonitis. It was obvious from the clinical standpoint that he had pylephlebitis of the liver, but by that time there remained no localized signs of the original inflammatory focus from which it arose. All we had to go on were the history and the observations of the family doctor, who is an excellent observer. The latter reported that the tenderness and pain had been confined to the left lower quadrant. Because of that, although acute appendicitis is by far the most frequent source, I made the suggestion that the point of origin might have been a diverticulitis of the sigmoid.

Clinical Diagnoses

Appendiceal abscess ?
Diverticulitis ?
Pylephlebitis.

Dr. Donaldson's Diagnoses

Subacute cholecystitis.
Choledocholithiasis.
Cholangitis, intrahepatic.

Anatomical Diagnoses

Appendiceal abscess.
Pylephlebitis.
Multiple liver abscesses.

Pathological Discussion

Dr. Benjamin Castleman: The post-mortem examination revealed that the primary infection was in the appendix, which formed the base of a large abscess about 9 cm. in diameter. The appendiceal vein could not be identified, but the ileocolic vein was filled with pus and the phlebitis had extended into the portal vein, resulting in a widespread intrahepatic pylephlebitis with multiple liver abscesses (Fig. 1). Although the gall bladder did have a few small stones and was mildly inflamed there was no cholangitis and it certainly was not a factor in the pathogenesis of the pylephlebitis.

The widespread distribution of the liver abscesses had been determined before death by the intravenous injection of Thorotrast (Fig. 2), which proved that surgical drainage would have been futile. Occasionally, when there is one large abscess or one cluster of small abscesses, drainage may be attempted.

The New England
Journal of Medicine

Formerly
The Boston Medical and Surgical Journal

Established in 1828

Owned by the Massachusetts Medical Society and Published under the Jurisdiction of the Committee on Publications

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Subscription Terms: $6.00 per year in advance, postage paid, for the United States (medical students, $3.50 per year); Canada, $7.04 per year, Boston funds; $8.52 per year for all foreign countries belonging to the Postal Union.

Material for early publication should be received not later than noon on Friday.

The Journal does not hold itself responsible for statements made by any contributor.

Communications should be addressed to the *New England Journal of Medicine*, 8 Fenway, Boston, Massachusetts.

JAUNDICE FROM HUMAN SERUM

Ever since immunization against yellow fever has been undertaken on a large scale there have been reports of jaundice of varying severity occurring in inoculated persons. In the early reports attempts were made to explain the occurrence of such cases on the basis either of coexisting epidemics of catarrhal jaundice or of actual infections with living yellow-fever virus contained in the vaccine. These explanations have since been discarded as not entirely fitting the facts.

In 1939 about 1,300,000 persons received protective inoculations against yellow fever. One hundred and eighty-seven different lots of vaccine were involved, but in each the virus had been preserved in human serum. One lot alone gave rise to jaundice in 304 persons, or slightly more than one fourth of those to whom it was given. A change made in the seed virus seemed to eliminate the difficulty, but in 1940 many cases again appeared following the use of other lots of vaccine.

With the mobilization of troops for service in yellow-fever areas, vaccination against this disease was undertaken on a large scale among the armed forces, and during the first six months of 1942 over 25,000 cases of jaundice appeared among American troops who had received such protective immunization. There were 62 deaths, making a case fatality rate of about 0.25 per cent. The vaccine used in all these cases likewise contained human serum as a base.

More recently a change to a vaccine with an aqueous base seems to have eliminated this complication, without impairment of the immunizing qualities of the vaccine, as indicated by laboratory tests. Over six hundred thousand doses of this aqueous-base vaccine prepared by the United States Public Health Service have now been used, and no untoward effects have been recorded after an apparently adequate period of observation.[1]

In Great Britain, cases have been encountered in which jaundice and the other symptoms characteristic of the syndrome following the inoculation of yellow-fever vaccine occurred after the injection of human serums that did not contain yellow-fever virus. Medical officers of the British Ministry of Health[2] have recently prepared a thought-provoking review of the present knowledge and recent experiences in this field, under the title "Homologous Serum Jaundice." A few of the outbreaks noted in this report, other than those following yellow-fever vaccine, deserve brief mention.

The earliest cases date back to 1885, when 191 cases of jaundice occurred in Bremen several weeks after vaccination of 1289 shipyard workers with a "glycerinated humanized lymph." In two groups of workers in the same shipyard who were vaccinated at the same time with different batches of lymph, no jaundice occurred.

In 1937, an outbreak occurred in which 41 out of 109 recipients of a single batch of measles convalescent serum given subcutaneously developed jaundice, and 8 of them died. These cases were scattered through the southern part of England. In addition, 11 cases of jaundice were reported following the injection of pooled Berkefeld-filtered measles adult serum, with 1 death.

In March, 1942, of 266 British troops who each received less than 14 cc. of Seitz-filtered mumps convalescent plasma in one or two doses intravenously, 86 developed jaundice. Furthermore, 48 cases of jaundice following the injection of mumps convalescent serum were studied at the Harvard–Red Cross Hospital.

In Great Britain, about a dozen cases have also been reported in which jaundice occurred after a long interval following the last of a series of transfusions of large amounts of dried and reconstituted human serum. And, cases following repeated whole-blood transfusions have been noted.

In this country, Beeson[3] has reported 7 cases of jaundice that occurred from one to four months after transfusions of blood or plasma given at the time of injuries or of surgical operations. Three of these cases were recent, and 4 were culled from the records of 79 cases at the Grady Hospital in Atlanta in which the patients had been diagnosed as suffering from acute catarrhal jaundice or toxic hepatitis. Clinically these cases were similar to the mild cases of jaundice in the groups already mentioned.

Jaundice was the outstanding clinical feature in all these cases, and varied in severity. In the fatal cases, there was a fulminating hepatic necrosis, and widespread changes in other organs. Splenic enlargement was inconstant. Urticarial and other rashes, usually classed as erythema multiforme, occurred in almost half the cases. Stiff joints without swelling occurred in about one fourth of them. There was some itching before the onset of jaundice. Anorexia, nausea and a heavy feeling in the epigastrium were the other frequent symptoms. The latent period between injection and symptoms was usually between sixty and ninety days, but ranged from two to eighty weeks.

Analogous conditions have apparently been encountered in horses after the injection of homologous immune serums prepared in other horses but not with serums prepared in other animals—hence the designation "homologous serum jaundice."

In the cases of jaundice in human beings, the factors in the serum responsible for this condition have not yet been identified. Data concerning the donors are difficult to obtain in retrospect, and records are incomplete. Furthermore, the incidence and the occurrence of this complication are difficult to determine because of the long incubation period. This makes it highly essential to keep complete records concerning the donors and recipients of all preparations made from human blood. In the past it has been necessary to inquire concerning drugs and other toxic agents in any case that might be classed as catarrhal jaundice or toxic hepatitis. Now it is also necessary to consider previous inoculations as a possible cause of the jaundice in such cases. Only in this way can one hope to obtain further information regarding this extremely interesting and baffling condition that may be useful both in its prevention and in its management.

References

1. Hargett, M. V., Burruss, H. W., and Donovan, A. Aqueous-base yellow fever vaccine. *Pub. Health Rep.* 58:505-512, 1943.
2. Homologous serum jaundice. Memorandum prepared by medical officers of the Ministry of Health. *Lancet* 1:83-88, 1943.
3. Beeson, P. B. Jaundice occurring one to four months after transfusion of blood or plasma: report of seven cases. *J. A. M. A.* 121:1332-1334, 1943.

NEW TREATMENT FOR THE "HOOPING COUGH"

William Moss, of Liverpool, writing about 1784 in *The Liverpool Guide*, made the following shrewd remarks concerning the treatment of the chin-cough, known variously as "hooping cough," "whooping cough" and plain "pertussis": "When the complaint takes a favorable turn it is frequently attributed to the means that were last used: hence that means is ever after recorded as infallible. As

it is a disease of the spasmodic or convulsive kind it has been sometimes relieved, or even removed, by a shock or sudden fright: thus riding upon a bear (a frightful mode of travelling no doubt) from the fright it occasions has been said to be serviceable. Giving the patient a part of some disgustful animal, as a mouse, &c., to eat, and afterwards informing him of it; and so forth."

The diversity of the methods of treating whooping cough offers the best evidence of the intractability of the infection and the uncertainty of its course. The drugs that have been used for its alleviation are legion: garlic has been put in the shoes of its victims; they have been taken to the gas works to inhale the invigorating chlorine fumes; they have been treated by x-rays, have been injected with serums, vaccines and undenatured bacterial antigens and have received topical applications to the upper reaches of the nasal mucosa. To Osler has been attributed the one form of therapy that has been proof against time — six weeks and a good big bottle of paregoric.

Practically every form of treatment that has been used has been apparently effective in a sufficient number of cases to attract a certain number of adherents, for even whooping cough must sometime come to its conclusion; any sedative form of treatment is certain to be palliative to some degree, although none can claim consistently spectacular results. The Sauer type of vaccine given in large doses can be considered as prophylactically successful.

The December 26, 1942, issue of the *British Medical Journal* makes editorial comment, under the title "High Flying for Whoopers," on one of the newer and more novel forms of treatment, as developed and published by the Berne school of medical practice. By this method of treatment, whoopers in scientifically impressive numbers were given ninety-minute airplane flights, ascending not too rapidly to an altitude of eleven to twelve thousand feet, which was maintained for forty minutes. An abrupt cure was registered for 22.8 per cent, with another 32 per cent cured within eight days. A second flight was sometimes necessary. Less spectacular, the Jungfrau was ascended by rail by another group, with no benefit accruing. Truly impressive results, however, were obtained by placing patients in a low-pressure chamber for thirty minutes, there being 31 per cent of immediate cures, with an additional 50 per cent improved.

If these results can be consistently obtained something of real value has been offered — provided enough low-pressure chambers can be made available when the need for them arises.

MEDICAL EPONYM

Williams's Tracheal Tone

This physical sign was described by Dr. Charles J. B. Williams (1805–1889) in the fifteenth of a series of lectures delivered to the students of St. George's Hospital, London, during 1836 and 1837. The lectures were published in the *London Medical Gazette* and in book form, both in London and Philadelphia, in 1838 and 1839. The following is a quotation from page 148 of *Lectures on the Physiology and Diseases of the Chest* (Philadelphia, 1839):

> . . . in dilated bronchi, if any dulness exist, it is generally in the mammary, lateral or scapular regions of the chest, and is often accompanied by a sound of a peculiar kind. This is a hollow tube-like sound, and from its semblance to that produced by mediate percussion on the trachea, or by tapping with the finger on the mouth of a small phial, I have given it the name of *tracheal* or *amphoric*. I can give you a notion of the kind of sound, by filliping on a finger pressed on the larynx or trachea, or on the cheek when the mouth is opened in the manner of sounding the letter O. . . .

In the sixteenth lecture, page 161, Dr. Williams mentions the occurrence of the same sound in certain cases above the dullness due to pleural effusion:

> . . . let this portion of lung be perfectly condensed by a liquid effusion, or perfectly consolidated by hepatization, and you will then get the bottle-note of the tubes, just as you do of the windpipe where no lung intervenes . . . but since my attention has been drawn to it, I have met with several cases of both pleurisy and pneumonia, in which it existed in a smaller degree; and I had occasion to notice in the last lecture that it sometimes occurs with dilated bronchi.

R. W. B.

RESOLUTION ON DEATH OF HAROLD WARD DANA

The members of the Senior Staff of the Boston City Hospital have suffered a severe loss in the death of Dr. Harold Ward Dana. He was for twenty years a prominent member of the Medical Staff of the Boston City Hospital.

During his long term of service he was also identified with the teaching of clinical medicine at Tufts College Medical School, holding the rank of clinical professor of medicine.

Although Doctor Dana resigned from the hospital in 1935, he maintained an active interest in the institution and kept in touch with his many friends on the staff.

He also served as major in the Medical Corps of the United States Army during the first World War, and following this he was active in the Military Order of the World War and numerous other societies. Therefore, be it resolved

THAT the members of the Senior Staff of the Boston City Hospital hereby express their regret at the loss of a valued member of the profession and extend to the members of his family their most sincere sympathy.

CARMI R. ALDEN, *Secretary*
Senior Staff, Boston City Hospital

WAR ACTIVITIES

CIVILIAN DEFENSE

RULES FOR AFFILIATED HOSPITAL UNITS

The following circular letter (Medical Series No. 31) has recently been released by the Office of Civilian Defense, Washington, D. C.:

* * *

One hundred and ninety-one hospitals and medical schools have been invited by the Surgeon General of the United States Public Health Service to organize affiliated hospital units of the Emergency Medical Service of the United States Office of Civilian Defense. The invitation was extended to so large a number of civilian hospitals because each unit will be called on for service only in a war emergency affecting its own region. Units will be activated only in event of a grave military disaster affecting the civilian population or military personnel in the area in which the parent hospital is located. Activation of a unit will take place only on recommendation of the state chief of Emergency Medical Service and the regional medical officer of the Office of Civilian Defense, subject to certain limitations imposed by the Surgeon General and the chief medical officer of the Office of Civilian Defense and by agreements with invited hospitals.

Because these limitations may not as yet be understood by all physicians and hospitals that have been invited to participate in the Emergency Medical Service, the rules governing activation of affiliated units are set down as follows:

1. Members of the staffs of affiliated units are commissioned in the inactive reserve of the United States Public Health Service, generally with the rank of passed assistant surgeon, surgeon or senior surgeon (equivalent, respectively, to the Army rank of captain, major or lieutenant colonel). They will remain on inactive status for the duration of the war unless urgent need for their services should arise in their region because of an air raid or other grave wartime disaster. When activated under such circumstances, these officers will receive the pay and allowances of officers of equivalent grades in the armed forces.

2. The two specific purposes for which a unit may be activated are:

(*a*) For duty in an emergency base hospital to which civilian casualties and other hospitalized patients must be transferred because a community is under enemy attack and one or more of its hospitals must be evacuated.

(*b*) For temporary duty to assist the armed forces at the time of an extraordinary military emergency, which may temporarily overtax local military hospital facilities. Such temporary assistance will be provided in or near the locality in which an affiliated unit has been organized. The period of emergency assistance is expected to be of short duration and will last only until the Surgeon General of the Army can send in additional medical officers or until he can distribute the excessive load of sick and wounded to military hospitals in other parts of the country. Affiliated units are organized primarily for civilian protection and are not to be used to staff military hospitals as they expand to meet increasing medical requirements of the Army.

3. Since affiliated units are organized by the Medical Division of the Office of Civilian Defense as part of the Emergency Medical Service of their states, they will be expected to provide aid only in their own or neighboring states. Their members will not be detached for duty in other parts of the country nor, in accordance with the terms of their recruitment, will they be activated for any other duty except those listed in paragraph 2 of this statement.

4. A unit organized from the staff of a teaching hospital of a medical school will not be called unless the hospital itself must be evacuated or unless there is no unit from a nonteaching hospital to meet the emergency need.

5. The period of obligation for service will cease at the termination of the present national emergency; the Surgeon General will accept the resignations of members of units six months after cessation of hostilities.

6. A commission in the inactive reserve of the United States Public Health Service does not prevent a member of an affiliated unit from entering the armed forces; resignation will be accepted for this purpose.

7. Members of affiliated units may wear the authorized lapel buttons which indicate that they have enlisted for emergency service. They are not to wear the uniform until called to active service and need

not purchase a uniform unless the possibility of active service is imminent. Uniforms will not be required for brief periods of active service.

Because it is essential for civilian protection, the organization of affiliated units has received approval of the Board of Trustees of the American Medical Association. For the same reason, the Directing Board of the Procurement and Assignment Service has authorized "essential" physicians to accept positions in affiliated units.

REPORT OF MEETING

NEW ENGLAND PATHOLOGICAL SOCIETY

The annual spring meeting of the New England Pathological Society was held at the new auditorium of the Boston University School of Medicine on the evening of May 20 at 8:00 p.m. The guest speaker was Dr. Howard T. Karsner, professor of pathology and director of the Institute of Pathology, Western Reserve University and University Hospitals, Cleveland, whose subject was "Functioning Endocrine Tumors."

Dr. Karsner gave a summary of the tumors of endocrine glands that may exhibit disturbances apparently due to hormonal influences. Illustrative cases were presented and oriented in reference to their origin. The tumors first discussed were adenomas of the pituitary gland, acidophilic and basophilic, and the neoplastic lesions that destroy the gland. Lesions of the parathyroid gland, including hyperplasias and neoplasms, were reviewed. Of the tumors of the pancreas, those arising from the islets were emphasized. Neoplasms of the adrenal cortex and medulla were described, with emphasis on the distinctive clinical and pathologic manifestations — those of the cortex producing alterations of the secondary sexual characters, and those of the medulla, increased output of adrenaline. Of the ovarian tumors, those accompanied by the phenomena of feminization and virilism were considered, as were functioning tumors of the testis. Throughout the paper emphasis was laid on the correlation of the diseases with hormonal assays and the diagnostic aid that may be provided by certain of the assays.

Following the program a business meeting was held with the election of the new officers. These are as follows: president, Dr. Alan Moritz, of Boston, and vice-president, Dr. Joseph Porter, of Portland, Maine.

BOOK REVIEWS

Emergency Care. By Marie A. Wooders, B.S., R.N., and Donald A. Curtis, M.D. 8°, cloth, 560 pp., with 201 illustrations. Philadelphia: F. A. Davis Company, 1942. $3.50.

This volume on emergency care is a nurses' manual for service in national and civil emergencies as is stated in a foreword by Colonel Walter P. Davenport, M.C., A.U.S.

The book is divided into seven units covering general emergencies, hospital accidents, accidents due to individual activities, occupational emergencies, national and civil emergencies, and signs, symptoms, complications and treatment in first aid. Each unit is well and profusely illustrated with clear and simple figures. For example, Chapter XI shows extremely good illustrations of the poisonous plants that may come in contact with or be eaten by the unwary. Other units of the book show the same completeness in illustration and graphic description, particularly the chapter on fractures and dislocations and the transportation of the sick and injured.

The authors aptly remark that the training of people to face danger and disaster should be begun by teaching first aid and disaster co-operation in the high schools and by using military discipline for the young men and that of auxiliary services for the young women. It is the reviewer's opinion that physicians can profit by a careful reading of this volume as well as army and civilian nurses, for whom the book is primarily written.

Abdominal and Genito-Urinary Injuries. Military Surgical Manuals: Vol. III. Prepared under the auspices of the Committee on Surgery of the Division of Medical Sciences, National Research Council. 8°, cloth, 243 pp., with 28 figures. Philadelphia and London: W. B. Saunders Company, 1942. $3.00.

This compendium relating to abdominal injuries and to those of the genitourinary tract leaves a favorable impression. It is concise, clearly written and intelligently illustrated. The authors have assumed that they are writing for a group of men already trained in general surgery and have confined their text to the management of those injuries encountered in modern warfare. The reader does not have to wade through hundreds of pages covering elementary surgical instruction; practically everything in the book deals with the problems in which he is particularly interested.

The general character of war injuries, the background of the soldier who is wounded and the methods of handling the wounded, as well as the essentials of preoperative and postoperative care, are briefly outlined. Other sections deal with the management of injuries of specific organs.

Genitourinary injuries are treated briefly in the section on abdominal surgery, and at greater length in the section devoted to this class of injuries. The chapter on injuries of the kidney and ureter and that on the care of the neurogenic bladder are particularly good. The book closes with a few pages of "Do's" and "Don't's" regarding genitourinary injuries.

There are a few discrepancies between the advice given by the writers of various chapters. For example, one advises drainage of the peritoneum in cases of intraperitoneal rupture of the bladder, whereas another advises against it. Generally speaking, however, the teaching is consistent.

Orthopedic Subjects. Military Surgical Manuals: Vol. IV. Prepared and edited by the Subcommittee on Orthopedic Surgery of the Committee on Surgery of the Division of Medical Sciences, National Research Council. 8°, cloth, 306 pp., with 79 illustrations. Philadelphia and London: W. B. Saunders Company, 1942. $3.00.

This military surgical manual on orthopedic surgery has been written by recognized authorities in the United States under the editorship of Dr. George E. Bennett. Although written primarily as a guide for the medical of-

ficer it should be of equally great value to the industrial and orthopedic surgeon engaged in civil practice.

The manual is divided into four major sections: ununited fractures; injuries of the spinal column; compound fractures; and osteomyelitis. The text is well written, and the procedures advocated are clearly described. Adequate warning is given of complications and of the dangers to be avoided. Whereas undue emphasis is given at times to the favorite method of treatment of the surgeon who has written each chapter, the general directions are sound and are stated in a simple understandable manner.

This is an excellent manual, well conceived and ably written. Although it will not make orthopedic surgeons of the medical officers who first treat these injuries, it should lead to greatly improved care, to a rapid return of function and to a great decrease in permanent disability.

First Aid and Bandaging. By Arthur D. Belilios, M.B., B.S. (Lond.), D.P.H. (Eng.), and others. 16°, cloth, 628 pp., with 239 illustrations. Baltimore: The Williams and Wilkins Company, 1942. $1.75.

This handbook gives a comprehensive exposition of its subject, from the general principles of first aid through all the special sections that are necessary in any consideration of this subject. It even takes up the subject of first aid in maternity cases. The section on the treatment of hemorrhage is clearly and soundly given so that a first-aid student can easily grasp the situation.

The three chapters on the respiratory system, resuscitation and asphyxia are well illustrated and much to the point. In the section on burns, the question of shock and excluding air from the burned surface, the removal of clothing and absolute cleanliness are given the importance that they deserve. As in so many first-aid books, immediate treatment with a solution of sodium bicarbonate is given prominence. It is of interest to read that the well-known, earlier treatments with carron oil and with various ointments are only mentioned as having now been discarded, at least in all but the most trivial burns. The triple-dye treatment is given prominence.

The following apt quotation is taken from the first section of the book: "First aid cannot be learned entirely from a textbook, nor can it be practiced by rule of thumb. The layman who attempts to do without professional assistance is not practicing true first aid." Certainly the student of first aid will learn from this book that overzealousness may result in harm to the patient in attempting too much too quickly.

Shock: Its dynamics, occurrence and management. By Virgil H. Moon, M.Sc., M.D. 8°, cloth, 324 pp., with 36 illustrations. Philadelphia: Lea and Febiger, 1942. $4.50.

The basis for this text may be stated briefly as follows: Shock results from leakage through capillary walls, not only at sites of injury but throughout the body, particularly in the viscera. The resulting decrease in effective circulating plasma volume causes tissue anoxia and therefore death. If there is no local trauma, capillary leakage is assumed to result from various deleterious agents affecting the capillary walls directly or as a result of the anoxia caused by such agents. The evidence for capillary leakage is the presence of congestion of the peripheral vessels, petechial hemorrhages, edema and effusions, which are uniformly present in all types of shock. Since hemoconcentration is an inevitable sequel, it is always present. Such phenomena will not be found in hemorrhage, because hemorrhage is not shock.

The data are woven into a pattern that results in a reaffirmation of the classic view of shock. The author, however, has found it desirable to redefine shock as follows: "Shock is a disorder of fluid balance resulting in a peripheral circulatory deficiency which is manifested by a decreased volume of blood, reduced volume flow, hemoconcentration, and by renal functional deficiency." No doubt this definition will require alteration in the light of the enormous mass of new data that are now being gathered. For example, there is recent evidence contradicting the theory of leakage through capillaries outside local areas of injury. The kidney, furthermore, although a vital organ, is no more important than the liver, the function of which has also been shown to fail.

The reviewer believes that much of the evidence cited in support of the author's viewpoint is too selective, and some of it insufficient in detail, to be convincing. The case histories in support of the evidence for hemoconcentration (pp. 249–251) are an illustration in point. So far as the pathological data on leakage are concerned, the presence of congestion and petechial hemorrhages does not necessarily imply the existence of increased capillary permeability.

A number of statements are of dubious validity. Examples of such statements are the following: Page 24—"[Among the clinical signs of shock] there is a constant thirst but efforts to relieve it are ineffectual because of persistent vomiting. . . . Often there is diarrhea. . . ." Page 50—"If arterial vasoconstriction were an important primary factor initiating shock, one would expect that syndrome to develop occasionally in cases of so-called essential hypertension. . . . An extensive superficial burn will result in shock in a degree proportional to the severity and the area of the burn. If treated promptly, as with tannic acid, shock may not develop or will be of lesser degree." Page 126—"In one group of experiments, a neutralized solution of trypan blue, pH 7.6, was injected intravenously when examinations of the blood indicated that hemoconcentration was developing. Extensive visceral areas were found at necropsy to be stained with the dye. . . . Likewise the serous effusions in the pleural and pericardial cavities were distinctly tinged with blue. The muscles and other peripheral tissues were not affected. *These results indicate that capillary endothelium in extensive visceral areas became abnormally permeable to colloids. The permeability and the loss of fluid were not limited to the area of tissue injury. This finding is incompatible with the belief that shock is due to loss of fluid in local areas of trauma.*"

In the reviewer's opinion, the book is not likely to rank among the enduring contributions to the subject of shock.

A Textbook of Clinical Neurology, with an Introduction to the History of Neurology. By Israel S. Wechsler, M.D. Fifth edition. 8°, cloth, 840 pp., with 162 illustrations. Philadelphia and London: W. B. Saunders Company, 1943. $7.50.

Four editions of this popular textbook have been called for since it was originally issued in 1927. Since the last edition, four years ago, new material has been added regarding chemotherapy, headache, electroencephalography and a few other topics. The book is therefore improved and its usefulness enhanced.

NOTICES

SOCIETY MEETINGS AND CONFERENCES

CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING THURSDAY, JULY 15

THURSDAY, JULY 15

•10:00–11:30 a.m. Medical staff rounds. Peter Bent Brigham Hospital.

MONDAY, JULY 19

•12:15–1:15 p.m. Clinicopathological conference. Peter Bent Brigham Hospital.

TUESDAY, JULY 20

•12:15–1:15 p.m. Clinicoroentgenological conference. Peter Bent Brigham Hospital.

2:00–4:00 p.m. Myasthenia gravis clinic. Out Patient Department, Massachusetts General Hospital.

WEDNESDAY, JULY 21

•12:00 m. Clinicopathological conference. Children's Hospital.

•Open to the medical profession.

SEPTEMBER 8–11. American Congress of Physical Therapy. Page 32, issue of July 1.

OCTOBER 11–22. 1943 Graduate Fortnight of the New York Academy of Medicine. Page 32, issue of July 1.

DISTRICT SOCIETIES

MIDDLESEX NORTH
JULY 28.

WORCESTER NORTH
JULY 28.

BOOKS RECEIVED

The receipt of the following books is acknowledged, and this listing must be regarded as a sufficient return for the courtesy of the sender. Books that appear to be of particular interest will be reviewed as space permits. Additional information in regard to all listed books will be gladly furnished on request.

Diseases of the Nose, Throat and Ear: Medical and surgical. By William L. Ballenger, M.D.; and Howard C. Ballenger, M.D., associate professor of otolaryngology, Northwestern University School of Medicine, Chicago, and surgeon, Department of Otolaryngology, Evanston Hospital, Evanston, Illinois. Eighth edition. 8°, cloth, 975 pp., with 604 illustrations and 27 plates. Philadelphia: Lea and Febiger, 1943. $12.00.

This standard reference work has been in part rearranged, rewritten and amplified. Much obsolete and repetitious matter has been eliminated. Many illustrations have been replaced, and new ones added. New procedures, such as Dr. Brian T. King's operation for bilateral paralysis of the recurrent laryngeal nerves, Dr. J. D. Kelly's technic of arytenoidectomy for the same type of paralysis, and Lempert's endaural approach to the mastoid and his fenestration operation for otosclerosis, have been added. Many photomicrographs covering a wide range of pathologic conditions have been included.

(Books Received continued on page viii)

THE CHANNING HOME
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Standard Nursing Procedures of the Department of Hospitals, City of New York. Prepared by the Committee on Nursing Standards, Division of Nursing, Department of Hospitals. Mary E. Manley, R.N., M.A., director. 8°, cloth, 436 pp., with 28 illustrations and frontispiece. New York: The Macmillan Company, 1943. $3.25.

This book has been compiled primarily for the use of nurses in the several institutions of the Department of Hospitals in New York City. However, it comprises a detailed manual of practice suitable for nurses in any community. It is divided into four parts, the first having to do with the history and administration of the New York hospitals; the second discusses basic nursing care; the third, special nursing procedures, such as neurologic, obstetric and pediatric; and the fourth, the place of the hospital in the community.

A Manual of Otology, Rhinology, and Laryngology. By Howard C. Ballenger, M.D., associate professor of otolaryngology, Northwestern University School of Medicine, Chicago, and surgeon, Department of Otolaryngology, Evanston Hospital, Evanston, Illinois. Second edition. 8°, cloth, 334 pp., with 114 illustrations and 3 color plates. Philadelphia: Lea and Febiger, 1943. $4.00.

The second edition of this concise manual on diseases of the nose, throat and ear has been revised in part to conform to present-day knowledge and practices. Photomicrographs of commoner pathologic conditions have been added. A new chapter covers foreign bodies in the air passages and the technic for tracheotomy. The work is based somewhat on the larger and more comprehensive work of Dr. Ballenger, and has been prepared primarily for the medical student.

Flying Men and Medicine: The effects of flying upon the human body. By E. Osmun Barr, M.D. 8°, cloth, 243 pp., with 8 illustrations and 1 plate. New York City and London: Funk and Wagnalls Company, 1943. $2.50.

This is a popular work in which the effects of flying are explained in language that can be understood by the layman. It is written especially for the prospective flyer and its aim is to present the medical aspects of aviation that determine whether a person is suited physically and mentally to undertake the exacting training that flying requires. It discusses how the candidate can prepare himself for examinations and how he can maintain his efficiency after he has qualified as an aviator. The book explains why the eye is so important to flying, how the ear works in the air, the need of a strong breathing system, what the circulation does and how the digestive system acts in flying. It emphasizes the necessity for a stable nervous system in all aviators.

A Manual of Pulmonary Tuberculosis and an Atlas of Thoracic Roentgenology. By David O. N. Lindberg, M.D., lecturer on tuberculosis, State University of Iowa College of Medicine, and director of roentgenology, Iowa State Sanatorium. 4°, cloth, 233 pp., with 44 illustrations and 145 plates. Springfield, Illinois: Charles C Thomas, 1943. $6.50.

This is a practical manual, emphasizing diagnosis, treatment and control of pulmonary tuberculosis. Such aspects as allergy, immunity, resistance and morphology are discussed, and theoretical, experimental or controversial subjects are not included in the text. A chapter is devoted to the interpretation of the roentgenograms of the chest. An atlas of roentgenograms follows the text and supplements it by direct reference.

Nurses in Action: The story of the Army Nurse Corps. By Colonel Julia O. Flikke, A.U.S., superintendent of the Army Nurse Corps. With an introduction by Lieutenant Colonel L. L. Gardner, M.C., A.U.S. 8°, cloth, 239 pp., with 121 illustrations and frontispiece. Philadelphia: J. B. Lippincott Company, 1943. $2.50.

This book tells the story of the Army Nurse Corps from its forerunner in Revolutionary War days and follows its development through the Civil War and the Spanish-American War up to the present time. Its scenes are laid in China, the Philippines, France, Iceland, New Caledonia and Corregidor, in fact, wherever nurses are called in the line of duty. An important part of the book is devoted to the training of army nurses and discusses the customs and etiquette of the service and the opportunities the corps offers for a career. The author has twenty-five years in the service to her credit and was sworn in early in 1942 as a colonel, the first American woman to hold so high a military rank. In World War I, she began her career when she took one hundred nurses to France. During the peace years she efficiently handled the Army Nurse Corps. Now, she is efficiently caring for the nursing problems of global war, and the nurses under the command are ready for service anywhere in the world.

The Physiological Basis of Medical Practices. By Charles H. Best, M.D., D.Sc. (Lond.), F.R.S., F.R.C.P. (Can.), professor and head of Department of Physiology, associate director of the Connaught Laboratories and research associate in the Banting–Best Department of Medical Research, University of Toronto; and Norman B. Taylor, M.D., F.R.S. (Can.), F.R.C.S. (Edin.), F.R.C.P. (Can.), M.R.C.S. (Eng.), L.R.C.P. (Lond.), professor of physiology, University of Toronto. Third edition. 8°, cloth, 1942 pp., with 497 illustrations, 79 tables and 3 color plates. Baltimore: The Williams and Wilkins Company, 1943. $10.00.

This reference work, first published in 1937 and many times reprinted and revised, has now been partially rewritten and includes the advances in the many fields of physiology that have taken place in the past three and a half years. The section "Intracellular Respiration, Respiratory Enzymes and Energy Liberation" has been entirely rewritten.

Manual of Industrial Hygiene and Medical Service in War Industries. Issued under the auspices of the Committee on Industrial Medicine, Division of Medical Sciences, National Research Council. Prepared by the Division of Industrial Hygiene, National Institute of Health, United States Public Health Service. Edited by William M. Gafafer, D.Sc. 8°, cloth, 508 pp., with 20 illustrations and 5 tables. Philadelphia and London: W. B. Saunders Company, 1943. $3.00.

This work is intended as a source of information for industrial physicians who must meet the changed conditions for industries converted to war purposes, and also as a guide for those who volunteer to take the place of industrial physicians and have gone into the service. It is a composite work of a number of authors, and the material seems to be well organized. It is divided into three parts. The first concerns the organization and operation of facilities and is subdivided into various services, such as medical, nursing, dental and plant; the second deals with the prevention and control of disease in industry, including plant sanitation in its broadest aspects; and the third discusses the manpower problem.

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